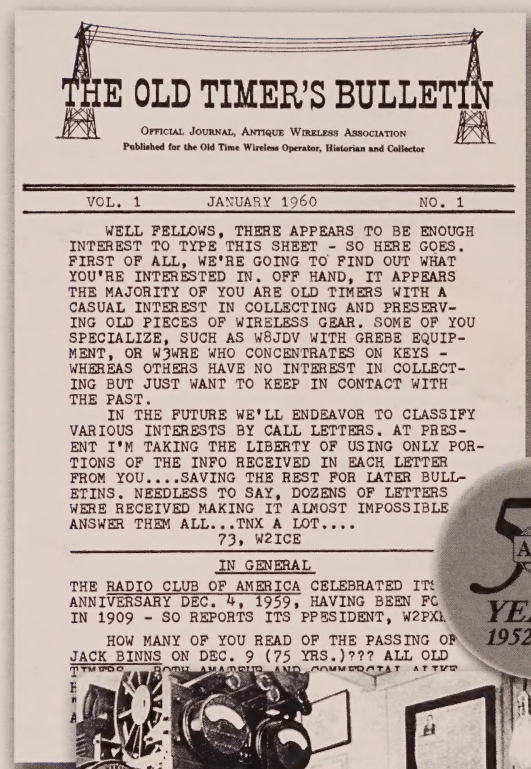
The OTB

OFFICIAL JOURNAL OF THE ANTIQUE WIRELESS ASSOCIATION, INC.

Published for the collector, historian and old-time radio operator

THE OLD TIMER'S BULLETIN MAY 2002 VOL. 43 / #2



THE OLD TIMER'S BULLETIN

OFFICIAL JOURNAL, ANTIQUE WIRELESS ASSOCIATION
Published for the Old Time Wireless Operator, Historian and Collector

VOL. 1 JANUARY 1960 NO. 1

WELL FELLOWS, THERE APPEARS TO BE ENOUGH INTEREST TO TYPE THIS SHEET - SO HERE GOES. FIRST OF ALL, WE'RE GOING TO FIND OUT WHAT YOU'RE INTERESTED IN. OFF HAND, IT APPEARS THE MAJORITY OF YOU ARE OLD TIMERS WITH A CASUAL INTEREST IN COLLECTING AND PRESERVING OLD PIECES OF WIRELESS GEAR. SOME OF YOU SPECIALIZE, SUCH AS W8JDV WITH GREBE EQUIPMENT, OR W3WRE WHO CONCENTRATES ON KEYS - WHEREAS OTHERS HAVE NO INTEREST IN COLLECTING BUT JUST WANT TO KEEP IN CONTACT WITH THE PAST.

IN THE FUTURE WE'LL ENDEAVOR TO CLASSIFY VARIOUS INTERESTS BY CALL LETTERS. AT PRESENT I'M TAKING THE LIBERTY OF USING ONLY PORTIONS OF THE INFO RECEIVED IN EACH LETTER FROM YOU....SAVING THE REST FOR LATER BULLETINS. NEEDLESS TO SAY, DOZENS OF LETTERS WERE RECEIVED MAKING IT ALMOST IMPOSSIBLE ANSWER THEM ALL...TNX A LOT....

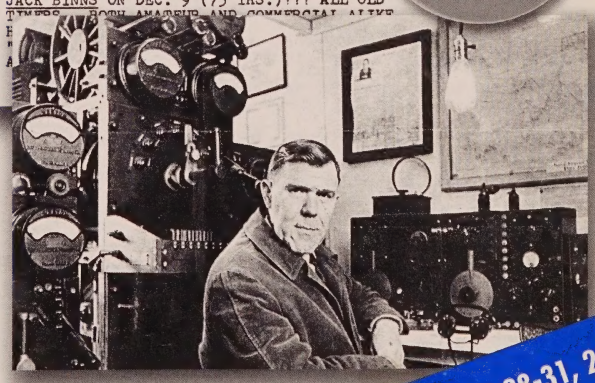
73, W2ICE

IN GENERAL

THE RADIO CLUB OF AMERICA CELEBRATED ITS ANNIVERSARY DEC. 4, 1959, HAVING BEEN FO IN 1909 - SO REPORTS ITS PRESIDENT, W2PX

HOW MANY OF YOU READ OF THE PASSING OF JACK BINNS ON DEC. 9 (75 YRS.)??? ALL OLD

Front cover of the first issue of *The Old Timer's Bulletin*, January, 1960.



Bruce Kelley in his barn museum, 1970.

ANNUAL CONFERENCE: AUGUST 28-31, 2002
Celebrating 50 Years of AWA — 1952-2002

THE OLD TIMER'S BULLETIN

OFFICIAL JOURNAL, ANTIQUE WIRELESS ASSOCIATION, INC.
BRUCE L. KELLEY 1914-1997, FOUNDING EDITOR

OFFICERS
President.....William B. Fizette, W2DGB
1st V.P......Geoffrey Bourne
2nd V.P. .....Ron Frisbie
Secretary.....Joyce Peckham
Treasurer .....Randolph W. Haus, KB2PLW

DIRECTORS
Lawrence F. Babcock
Brian C. Belanger
Geoffrey Bourne
Hugh J. Davey
Marc Ellis, N9EWJ
Christian R. Fandt
William Fizette, W2DGB
Ronald Frisbie*
Edward Gable, K2MP*
Randolph W. Haus, KB2PLW
Richard Neidich
Joyce W. Peckham
Lauren A. Peckham*
Allan Pellnat*
Thomas Peterson, Jr.*
Bruce D. Roloson
Robert Schaumleffel, WA2IKS
**Also serves on AWA Electronic Communication Board of Trustees*

CONFERENCE COMMITTEE
Chairman.....Hugh J. Davey
Programs.....Lauren Peckham
Auctions .....Walt Buffinton & Bruce Roloson
Equipment Contest.....Geoffrey Bourne
Registration .....Joyce Peckham
Photos .....Richard Ransley

HONORARY MEMBERS
Anthony Constable
Bro. Patrick Dowd. F.S.C., W2GK
Grote Reber
Elliot Sivowitch

REGIONAL MEETING REPS
California .....Floyd Paul, W6THU
Canada .....To Be Announced
D.C. Area .....Paul Mooney, K4KRE
Indiana .....Herman Gross
New York.....Ed Gable
Carolinas Chapter..Ron Lawrence, KC4YOY
Texas.....Chevie Crandell (Dallas) David Moore (Houston)

WEB SITE: http://www.antiquewireless.org
Antique Wireless Association, Inc. is an IRS 501(c)3 charitable organization.

AWARDS ADMINISTRATORS
AWA Houck Awards.....Barney Wooters
Bruce Kelley-OTB *Award*..Bill Denk
Equipment Awards.....Ralph Williams
J. Albert Moore Award.....Thomas Peterson, Jr.
Taylor Award.....Pete Yanczer
Tyne Award.....Lauren Peckham

WHOM TO CONTACT

Please write legibly. Enclosing an SASE speeds replies.

DUES AND ADDRESS CHANGES: Joyce Peckham (Secretary), Box E, Breesport, NY 14816, (607) 739-5443; FAX: (607) 796-6230, e-mail: awapeckham@aol.com. Dues: $20 per year in U.S.; $25 elsewhere. Life membership: $400 in U.S.; $500 elsewhere. Make checks payable to "AWA."

AWA OFFICIAL BUSINESS: William B. Fizette, (President), RR 1, Box 55, Henryville, PA 18332, (570) 629-0637.

BUSINESS CARD ADS: Robert W. Perry, W2TIX, "Smoke Signals," 131 E. High St., Painted Post, NY 14870.

OTB SUBMISSIONS: Marc Ellis, Editor, *OTB*, P.O. Box 1306, Evanston, IL 60204-1306, (847) 869-5016, e-mail: mfellis@enteract.com.

AWA REVIEW SUBMISSIONS: Tom Perera, W1TP, Editor, AWA Review, 11 Square Hill Road, North Caldwell, NJ 07006, e-mail: tomperera@wltp.com.

ORDERS FOR THE *AWA REVIEW* OR BACK ISSUES OF *OTB*: Edward M. Gable, 187 Lighthouse Rd., Hilton, NY 14468, (716) 392-3088.

WANT ADS AND COORDINATION OF SLIDE/VIDEO SHOWS: Richard Ransley, P.O. Box 41, Sodus, NY 14551, (315) 483-9307.

ANNUAL CONFERENCE BUSINESS: Hugh J. Davey, 32 Paula Dr., Long Valley, NJ 07853; (908) 850-9086; beagle2@sprynet.com.

FINANCIAL REPORTS: Randolph W. Haus, KB2PLW, P.O. Box 665, 6935 Rte. 227, Trumansburg, NY 14886; (607) 387-5293.

AWA ELECTRONIC COMMUNICATION MUSEUM: Please see "Museum News" column for contact and administration information.

OTB STAFF

Editor
Marc F. Ellis, N9EWJ

Design & Production
Claudia Gray

Copy Editor
Joseph J. Schroeder, Jr., W9JUV

Web Page Designer
Chuck Schwark

Advertising Mgr.
Robert W. Perry

CONTRIBUTING EDITORS

Amateur Radio
John Rollins, W1FPZ

Below 535
Frank Lotito, K3DZ

Book Reviews
David W. Kraeuter

Breadboarding
Dick Parks

Classified Ads
Richard Ransley

The Communications Receiver
William B. Fizette, W2DGB

Equipment Restoration
D.K. Owens

Key & Telegraph
John Casale, W2NI

Mikes and Men
George A. Freeman

The Museum
Ed Gable, K2MP

Obituaries
Charles Griffen, W1GYR

On the Internet
Chuck Schwark

Radio Reproducers
David Crocker

Television
Richard Brewster

The Vacuum Tube
Ludwell A. Sibley

ANTIQUE WIRELESS ASSOCIATION, INC.
BOX E, BREESPORT, NEW YORK 14816

The Old Timer's Bulletin is published approximately four times a year by and for members of the Antique Wireless Association, Inc. AWA is a nonprofit historical society founded in 1952 and chartered by the State of New York. *The Old Timer's Bulletin* is available through AWA membership. Its issuance is subject to change from time to time as to frequency, content, and size. It is not liable in any way for any buying-and-selling transaction entered into as a result of its content.

© 2002 Antique Wireless Association, Inc.

CONTENTS

CONFERENCE PREVIEW

10 **Rochester Conference 2002** ..... **Staff**

FEATURE ARTICLES

25 **Ohio's Radio Industry in the 1920s** ..... **by D.K. Owens**
If it was radio-related, there was probably an Ohio firm manufacturing it

38 **Asbestos Exposure And Radio Collecting** ..... **Joseph G. Jackson, M.D.**
A health hazard lurking in the cabinet of your latest flea market find?

41 **A 1929 Amateur Radio Station for the New Millennium** ..... **Edward P. Swynar, VE3CUI**
Part 3 —A serious regenerative receiver

57 **An Unusual Artifact from the Tidewater Wireless Telegraph Company** ..... **Neal McEwen, K5RW**
Amazing what one can learn from an advertising blotter!

60 **Recreating the General Electric Octagon Scanning-disk Television Receiver** ..... **Dennis Banker**
Dennis' meticulous replica is completed, but awaits a signal source for testing

67 **A Structured Approach to Fixing Up Those Nice Old Radios** ..... **Bill Fizette, W2DGB**
9—Restoration of a Meissner 8-tube "combination" kit receiver

COLUMNS

6 **AWA News** ..... **Staff**

14 **Museum News** ..... **Staff**

17 **The Communications Receiver** ..... **William Fizette, W2DGB**
The 1937 National NC-81X

21 **Amateur Radio** ..... **John F. Rollins, W1FPZ**
Results of the 2002 Linc Cundall Memorial OT CW Contest

23 **Radio Reproducers** ..... **Dave Crocker**
The Magestic Celluloid Horns

33 **Equipment Restoration** ..... **Ken Owens**
More Gems From The OTB *(And Other Publications)*

35 **Breadboarding** ..... **Richard A. Parks**
Super-Regenerative Detectors Part III

37 **Mics and Men** ..... **George A. Freeman**
The Mic: RCA 77-A; The Woman: Helen Field Fischer

39 **Television** ..... **Richard Brewster**
The Early Television Museum by Steve McVoy

47 **On the Internet** ..... **Chuck Schwark**
Vintage Hi-Fi Stereo On The Internet

50 **The Vacuum Tube** ..... **Ludwell A. Sibley**
25 Years: Saga of the Saga

51 **New Books and Literature** ..... **David W. Kraeuter**

54 **Key and Telegraph** ..... **John Casale, W2NI**
The Evolution Of A Triumph

64 **Recent Radio, TV and Entertainment Obituaries** ..... **Charles S. Griffen, W1GYR**

DEPARTMENTS/CLUB NEWS

4 **Presiden'ts Message**
5 **From the Editor**
4 **Letters to the Editor**
48 **About Our Authors**
69 **Business Card Ads**
71 **Classified**
74 **Silent Keys**
75 ***Museum Store***
76 **Museum Store Order form**

The President's Message

Turn to the "Silent Keys" column and you'll find an announcement of the formation of the AWA Memorial Gifts Program. This program, suggested by AWA VP Ron Frisbie, will give members and friends of the AWA and the AWA Museum an opportunity to remember AWA members, friends and relatives who have passed on.

There are no limits or restrictions to the program. It is only necessary to specify which organization is to receive the gift and whom it is in memory of. Arrangements can be made with the AWA President or the Museum Curator. Gifts are, of course, tax deductible.

This is the beginning of the outdoor season in much of the country, and that means old radio flea markets. The Carolinas Chapter has already started with a rousing and highly acclaimed "Spring Meet in the Carolinas" in March. Our congratulations to CCAWA President Ron Lawrence and his staff for a job well done.

There are old-radio meets in just about every part of the U.S. every year, including a number that are affiliated with the AWA. Refer to the AWA News in this issue of *The OTB* for information.

And about the time you receive this issue, the AWA Spring Meet will be taking place On May 4 in Bloomfield, along with the AWA and Museum Board meetings. In late August the Annual Convention will again take place in Rochester, NY, and we hope that you are planning to be there.

Those who have attended before will remember that there is a comprehensive schedule of historical programs, activities, seminars, and special meals in addition to the famous flea market. It is a splendid opportunity to meet with old friends and make new ones who are also interested in this wonderful hobby. Please see the "Conference Preview" section in this issue for more information.

Letters to the Editor

All letters to the Editor are read with interest and attention, though not all can be published in this column. Letters may be paraphrased, shortened or otherwise edited to fit the available space. The statements made by our correspondents are their own opinions and do not necessarily reflect the views of either the OTB *staff or the Antique Wireless Association.*

HOT SELLER

I went to a local antiques auction last Saturday (Cottone's Auctions in Mount Morris, NY), and am including a picture of the near-mint Sparton Cloisonne I saw come up for bid. I had never seen one before. Even the auctioneer was astounded when it sold on a phone bid for $10,300.00!!! The auction was a 2-day affair starting on 2/1/02. It was a big general antique auction of high end items (furniture, paintings, etc.). They have a great website (where I got the photo) just search for Cottone's.

PAUL ERNST
via e-mail

HARTLEY FINAL ERRORS AND OMISSIONS

Referring to the schematic for "A Final Amplifier For the 1929 Hartley" (P. 29 in the last issue [February, 2002] of *The OTB*), shouldn't the top of neutralizing capacitor C2 be connected to the *bottom* end of L1 rather than the top? Also, the specifications for coils L3 are missing from the parts list. Finally, aren't the 2-kV caps you show at C4, C5 and C6 overkill for the job?

FRANK LOTOTO
via e-mail

Author Eddy Swynar verifies that C2 should indeed be connected per Frank's comment. As to the voltage specs of C4, C5 and C6, Eddy says that, having once witnessed the explosion of an overloaded disc capacitor, he tends to be ultra conservative with voltage ratings. Your editor accidentally omitted the specs for the two r.f. chokes labeled L3. Each consists of 5 turns of #16 copper wire, close-wound (separate enough so as not to short turns) and 1/4" in diameter. Use a 1/4" drill bit as a temporary coil form.

From the Editor

Our May issue is the traditional "conference teaser," in which we give members a first look at all of the programs and excitement that will await them in the fall. All of this information is in the special "Conference Preview" section. One of the things you'll notice is that the conference dates have been moved from early September to late August. That is because our conference hotel, formerly the Thruway Marriott, is now the RIT (Rochester Institute of Technology) Conference Center and doubles as a dormitory during the school year. By scheduling just ahead of school opening, we ensure that the normal bloc of guest rooms are available for AWA Conference attenders. Last year, when ownership suddenly changed from Marriott to RIT, a number of our members lost their reservations and were transferred to offsite lodgings. That won't happen this year.

This year we have a very special Conference theme, celebrating the 50th anniversary of AWA. Take a look at the Old Equipment Contest rules and you'll see that Geoff Bourne and Ralph Williams have added a special twist in honor of the occasion. The theme categories, which normally revolve around the radio manufacturer being featured at the conference, now parallel the standard categories. The difference: to be entered in a theme category, your item must have won a blue ribbon at a previous AWA contest. It's not too early to search out, dust off, and refurbish your previous winner—perhaps something that was last on public view at Canandaigua!

I'd like to remind anyone with early memories of AWA to share that we are developing a special retrospective booklet commemorating "Fifty Years of AWA." When completed, the booklet will be mailed to all members. Obviously the more people who contribute memories, photos and AWA stories, the more interesting and complete this publication will be. President Bill Fizette is serving as coordinator for this project, and all of your contributions should be sent to him. Please see the boxed announcement in "AWA News" for more details. We need your help!

Among the many interesting presentations outlined in the "Conference Preview" section, you'll find a pet project of mine. The "Moonlight Restoration Forum" was originally conceived as a special program of restoration-oriented information for newcomers to our hobby. But, almost from the beginning, it became a forum of interest to newcomers and veterans alike with very strong audience participation. Its open-ended Wednesday evening time slot makes for a relaxed, easy-going interchange and we keep the program going as long as there are people in the room who want to toss ideas around.

The program begins with a few brief formal presentations, after which the meeting is thrown open to the floor for questions and discussion. I'll give one of the presentations, as will our restoration column editor Ken Owens. But we're also looking for a few volunteers. If you have a good idea for a short (about 15-minute) program on the theme of radio restoration, please contact me! Contact information is on the inside front cover or in the Moonlight Restorations "program recruitment box" in AWA news.

— MFE

NOT-SO-ANONYMOUS RADIO

The "Absolutely Anonymous" radio in your last issue (*An Absolutely Anonymous One-Tube Receiver,"* February, 2002 Issue, p. 49) is a Steinite. There's a picture of it in my *Radio Manufacturers of the 1920s* on p. 134.

ALAN DOUGLAS
Pocasset, MA

The "Absolutely Anonymous" one-tube receiver in the February issue (which I really enjoyed) is a Steinite. It is made in the same style as the crystal set of the same manufacture. Mine has a paper label on the front reading "Steinite Nationally Known Radio Products" and "One Tube Set."

BILL TURNER, WAOABI
via e-mail

I really enjoyed the February, 2002 issue of *The OTB*. The "Absolutely Anonymous One-Tube Receiver" Mr. Parks presented in this issue is not really anonymous at all. I have seen two others exactly like it, one on eBay and the other at a local meet. Those units had a small decal on the side of the small wooden "cabinet" identifying it as "Steinite" - presumably a product of Steinite Labs of Atchinson, Kansas. "Steinite" mica capacitors are

(continued on page 9)

AWA News

***OTB* POLICY ON PROMOTING EVENTS:** The *OTB* is pleased to list the meets and meetings of any established antique radio organization, whether or not it is associated with the AWA. Do not send your information directly to the *OTB* Editor. Please send it to Joyce Peckham, Box E, Breesport, NY 14816. Closing date is six weeks prior to first day of month of issue.

Calendar of AWA Activities

May 4
AWA Spring Meet

May 4
Semi-Annual Board Meeting (following AWA Spring Meet)

May 10-11
IHRS/AWA Spring Meet

May 17-18
Radio Daze 2002

August 10
NFWA/AWA Meet

August 28-31
AWA Annual Conference

November 10
AWA, Inc. Membership and Board Meeting

November 10
AWA Museum Membership and Board Meeting

Calendar of Meets

(AWA logo identifies AWA-sponsored events)

AWA SPRING MEET

May 4

Dawn to noon flea market, annex surplus and junque sale this year featuring audio/hi fi equipment, annex tour, indoor space for informal or group meetings with coffee and snacks available. Like many other meets we've had to streamline our event schedule; the luncheon and after-lunch auction have been eliminated. Admission free, seller's fee $3.00. Location: AWA Annex building, 6910 Rt. 5 & 20 (intersection with Rt. 444), Bloomfield, NY—on the grounds of the American Legion Post. Questions to Ed Gable, Museum Curator, at (716) 392-3088 or k2mp@eznet.net.

IHRS/AWA 31ST REGIONAL SPRING MEET

May 10-11

Presented by the Indiana Historical Society at the Hancock County Fairgrounds, Greenfield, IN, 9 miles East of Indianapolis. South from I-70 at State Rd #9. Exit 104. This site is mostly under roof. Located on Apple St. about 2 blocks N. of US-40 and 1 mile E. of SR-9. Friday, May 10: 4:p.m. to 8:00 p.m. swap n'Sell; only indoor set up on Friday. The 4H building provides ample indoor space with tables. There is a large bay door for easy entry. Pull up your vehicle and unload for a busy Friday and Saturday. We will lock the building at 8:00 p.m. Friday evening. Saturday, May 11: 7:00 a.m. to 3 p.m. Radio Swap n'Sell.(Indoor and outdoor setup.) Old Equipment Contest and Display; Awards Luncheon; Vintage Radio and Restoration Seminars. Area motels are: Super-8, 2100 N. State St., 317-462-8899 or 1-800-800-8000. Comfort Inn, 178 Martindale Dr., 317-467-9999 or 1-800-228-5150. Holiday Inn Express, 2070 N. State St., 317-467-0999. Dollar Inn, 2180 N. State St., 317-457-0067. The Hancock County Fairgrounds provides water and electric hookup for overnight campers at a cost of $10.00 per night. Registration fee is $5.00 per family for both days. One Swap n'Sell space (indoor or outdoor) $10.00 for both days. Saturday awards lunch is $3.00 per person. Send check for space reservation, payable to IHRS, to Fred Prohl, 3129 Lanam Ridge Rd., Nashville, IN 47448. Info: Glenn Fitch, 765-565-6911; glenn.fitch@cnz.com or Fred Prohl, (812) 988-1761; fprohl@att.net. Additional info at indianahistoricalradio.org

RADIO-ACTIVITY 2002

May 16-18

Sponsored by the Mid-Atlantic Radio Club. Please note the dates! In an effort to find cooler weather, the meet is being held one month earlier than previous years. But expect to find the same great line up of events such as the big flea market, old equipment contest, radio seminars, awards banquet, and auctions. The meet will be at the same location as last year, the Sheraton College Park in Beltsville, MD, conveniently located between Baltimore and Washington, DC at I-95 exit 29B, at the southwest corner of the interchange. For further info, contact Brian Belanger at 5730 Avery Park Dr., Rockville, MD 20855-1738, (301) 258-0708, or visit http://www.maarc.org for details and updates.

RADIO DAZE 2002

May 17-18

Sponsored by the Northland Antique Radio Club. At Comfort Inn of Plymouth, 3000 Harbor Lane, Plymouth, MN. Swap Meet-Auction-Contest-Garage Sale-Program-Luncheon

For more information: Contact Jim Thompson (612) 822-4000, Kip Wallace (952) 544-2547, NARC, P.O. Box 18362, Minneapolis, MN.

55418, or see NARC web site: www.geocities.com/TelevisionCity/4544/

EXTRAVAGANZA '02

July 12-14

Sponsored by the Michigan Antique Radio Club. At the Holiday Inn, South Lansing, MI. For information, contact Don Colbert, 22400 Norwin, Dearborn, MI 48124 or e-mail donsradio@aol.com

ARCI RADIOFEST XXI

August 9-11

Presented by the Antique Radio Club of Illinois at the Ramada Hotel, 345 River Rd., Elgin, IL 60123. We have moved the show back to the more popular Friday through Sunday time slot. Large radio swap meet, contest, presentations, donation auction, and much, much more. All sellers must be members of ARCI; no admission charge for non sellers. ARCI Membership: $15.00; Selling Spaces: $40.00 for the first; $50.00 per additional; limit 3. Special one-day single-space selling rates: Friday only, $30.00; Saturday only, $20.00; Sunday only, free. For more info: contact ARCI at P.O. Box 1139, La Grange Park, IL 60526, e-mail ARCI at arci31280@aol.com, or visit http://members.aol.com/arci31280/arci.htm

NIAGARA FRONTIER WIRELESS ASSOCIATION

August 10

Joint meet with the AWA and our largest of the year. At the Amherst Museum, Amherst, NY. From the NY State Thruway, take Exit 49 (Transit Rd., Rt. 78) north nine miles. Left on Tonawonda Creek Rd. just before entering Niagara County (there is also a Tonawonda Creek Rd, in Niagara County on the north side of the Creek). Proceed two miles west to the museum. The meet is outside just west of the buildings. There are lots of motels and restaurants at Thruway Exit 49. Flea Market 8 a.m. to noon. Museum exhibits open at 11:30 (there's a full room of early radios and TVs). Bring items for the auction beginning at about 11 a.m. There will also be a donation auction. Contest categories: 1. Any battery-powered 1920s radio; 2. Any AC-powered radio; 3. Any transistor radio; 4. Any novelty radio; 5. Open category—any radio or radio-related item 6. Any radio speaker. Entry fee for non-museum members is $6.00. Spouses $2.00. Includes annual NFWA membership and museum admission. No additional fees to sell or for any other activity. Lunch available. For info, call Larry Babcock at (716) 741-33082 or Gary Parzy at (716) 668-2943.

AWA ANNUAL CONFERENCE

August 28-31

Please see "CONFERENCE PREVIEW" section.

Recurring Meetings & Events

•Antique Radio Collectors of Ohio—meets first Tuesday of each month at 2929 Hazelwood Ave., Dayton, OH (4 blocks east of Shroyer Rd. off Dorothy Lane) at 7 p.m. Also annual swap meet and show. Membership: $10.00 per year. For more info, contact Karl Koogle: mail to above address; phone (937) 294-8960; e-mail karlkrad@gemair.com.

•California Historical Radio Society—For info on current meetings, call the CHRS hotline: (415) 821-9800.

•CARS, the Cincinnati Antique Radio Society—Meets on the third Wednesday of each month at ITT Technical Institute, 4750 Wesley Ave., Norwood (Cincinnati) Ohio. For more information contact Greg Tierney, (513) 732-1844, or Bob Sands, (513) 858-1755.

•Carolinas Chapter of the AWA—Hosts four "mini-swap-meets" each year (in January, May, July and October) plus an annual conference, "Spring Meet in the Carolinas," on the 4th weekend in March. Executive committee meets approximately quarterly. For more info, visit the web site at CC-AWA.ORG or contact Ron Lawrence, KC4YOY, Chapter President, P.O. Box 3015, Matthews, NC 28106-3015; phone (704) 289-1166; e-mail kc4yoy@trellis.net.

•Central Ohio Antique Radio Assn.—Meets at 7:30 p.m., third Wednesday of each month at Devry Institute of Technology, 1350 Alum Creek Rd., Columbus. (1-70 Exit 103B). Contact: Barry Gould (614) 777-8534.

•Delaware Valley Historic Radio Club—Meeting and auction begins 7:30 p.m. on the second Tuesday of each month. Location: Telford Community Center on Hamlin Ave. in Telford,

Presentations Needed For Moonlight Restorations Program

Interested in giving a short talk (15-minute limit) on a favorite radio restoration topic? The Moonlight Restorations Program, to be given Wednesday Evening (August 28th) at the Conference, is looking for a few good presentations. For more information, see "From the Editor." To discuss or sign up, contact Marc Ellis at 847-869-5016 or mfellis@enteract.com.

Nominations for AWA Awards

It is time to nominate candidates for six prizes to be given at the annual conference.

The **AWA Houck Award for Documentation** goes to an AWA member who has written several original articles on radio development or history in *The OTB, AWA Review*, or other publication. (This can include a book on a related subject.)

The AWA Houck Award for Preservation is for a member who, through personal accomplishment, has acquired and preserved by documenting an outstanding collection of radio artifacts. Send your selection(s) to the Houck Awards Administrator, giving your reasons why the nominee(s) should receive the Award. The address: Barney Wooters, 8303 E. Mansfield Ave., Denver, CO 80237.

The Bruce Kelley-OTB Award is given to the member who publishes in *The OTB* an article judged to be the most outstanding, original, historical presentation of the award year. For this year, articles in the August and November 2001 and February and May 2002 issues will be considered. The articles must have been written specifically for publication in The OTB, not reprinted from other journals. All AWA members are eligible for this award except those on the Award Committee and the OTB Editor. Simply identify the article and the nominee, with reasons for your selection; send to committee chairman Bob Thomas, W3NE, 216 Sunrise Lane, Philadelphia, PA 19118.

The J. Albert Moore award is a newly-instituted companion to the Bruce Kelley-OTB Award. The award comes to us through The Antique Radio Club of America, which was merged into AWA a few years ago. It was originally given for the most outstanding article (any category) contributed to the ARCA Gazette during the publication year. Though the award continues a memorial to Mr. Moore's contributions to ARCA, it has been re-oriented as a companion to the Bruce Kelley-OTB Award—honoring articles that do not fall into the historical category considered for the latter. And so the Moore award will be given "... to the article, or series of articles, deemed to be the most outstanding of those dealing with radio hardware (radio sets, radio systems or components) printed in the OTB during the award year. Eligible articles include those dealing with troubleshooting, restoration, performance evaluation, identification methods, and history. " For this year, articles in the August and November 2001 and February and May 2002 issues will be considered. All AWA members are eligible for this award except those on the Award Committee and the OTB Editor. Simply identify the article and the nominee, with reasons for your selection; send to committee chairman Thomas F. Peterson, Jr., 3060 Lander Rd., Cleveland, OH 44124.

The **Taylor Award**, in memory of John Taylor, RCA TV Developer, is for "preserving television history." Submissions are invited here, too, to Peter Yanczer, 835 Bricken Pl., Warson Woods, MO 63122.

The Tyne Tube Award is presented, in remembrance of Gerald F.J. Tyne, for contributions to preserving or documenting the history of tube technology. Nominations may be sent, with supporting reasons, to administrator Lauren Peckham, Box E, Breesport, NY 14816.

Please send nominations for all awards by August 1, 2002

PA. Annual dues: $15.00, which includes a subscription to the club's monthly newsletter *The Oscillator*. For more info contact Bill Overbeck at (610) 789-8199 or Dave Snellman at (215) 345-4248. Club mailing address: P.O. Box 847, Havertown, PA 19053.

•The Downer's Grove (IL) Park District Museum sponsors a monthly "Collector's Hour." Participants have the opportunity to display collections at the facility for several weeks before making their individual presentations. The event is open to the public with no admission charge. The museum has also begun to sponsor a yearly "Collector's Fair." For more info, contact Mark Harmon, The Downer's Grove Park District Museum, 831 Maple Ave., Downer's Grove, IL, 630-963-1309, fax 630-963-0496, mharmon@xnet.com.

•Houston Vintage Radio Association—Meets second Tuesday each month (except Jan. and Dec.) at Lai Lai Restaurant, Tides II Motel, Houston Medical Center, Main and Holcombe Sts., Houston, TX. Meetings include auction/program, 7-10 p.m. Assoc. publishes *Grid Leak* quarterly, monthly activity announcements. Membership $15/yr. Write: HVRA, P.O. Box 31276, Houston, TX 77231-1276, or call Richard Collins, (713) 778-0721.

•Hudson Valley Antique Radio & Phono Society—Meets third Thursday of month, 7 p.m. Meeting, swap meet, and membership info: Peter DeAngelo, President, HARPS, 25 Co. Rt. 51, Campbell Hall, NY 10916. (914) 496-5130.

•London Vintage Radio Club—This Ontario, Canada club meets in London on the last Satur-

AWA LIFE MEMBERSHIPS ARE NOW AVAILABLE

Cost: $400 (U.S.)/$500 (Elsewhere)
Send your check to AWA
Secretary Joyce Peckham, Box E, Breesport, NY 14816. Phone (607) 739-5443.
e-mail: awapeckham@aol.com. Major credit cards now accepted.

AWA NETS

PHONE:

SUNDAY:
7244 kHz, SSB, noon (NCS:WA4IAM);
3837 kHz, AM 4 p.m. (E.S.T.), 4:30 p.m. (during E.D.S.T.) (NCSs:W2ZM & W2AN)

TUESDAY:
14274 kHz, SSB, 2:30 p.m. (NCSs KC3YE and W0FXY)
3837 kHz SSB, 8 p.m. (NCS WB2SYQ)

MONDAY-WEDNESDAY-FRIDAY:
3867 kHz, SSB, 9:30 a.m. (NCS: W2OBJ)

CW:
DAILY, 4 p.m., 3588 or 7050 kHz. Protocol, informal. Check both frequencies for activity and join in, or call AWA de (your call) and see What you stir up.

First **WEDNESDAY** of each month, 8 p.m., 7050 kHz

2-M REPEATER (Rochester Area)

MONDAY, 7:30 p.m. (NCS: K2GBR)
Receive 145.290 MHz
Transmit 144.690 MHz

day of January, March, May, June and November. Annual flea market held in Guelph, Ontario in September in conjunction with the Toronto club. Contact: Lloyd Swackhammer, VE3I1A, RR#2, Alma, Ontario, Canada. (519) 638-2827.

•Mid-Atlantic Radio Club—Meets monthly, usually the third Sunday of the month at the New Hope Seventh Day Adventist Church, Burtonsville, MD. Contacts: President, Ed Lyon, 11301 Woodland Way, Myersville, MD 21773-9133, (301) 293-1773, e-mail lyon@fred.net or Membership Chair, Paul Farmer, (703) 960-0650, e-mail: oldradiotime@hotmail.com. Website www.maarc.org

•New Jersey Antique Radio Club—Meets second Friday each month, 7:30 p.m. Holds three annual swap meets. Contact (send SASE) Phil Vourtsis, 13 Cornell PI., Manalapan, NJ 07726, (732) 446-2427.

•Northwest Vintage Radio Society—Meets second Saturday of each month (except July and August), at or about 10 a.m., at Abemathy Grange Hall, 15745 S. Harley Ave., Oregon City, OR. Members display radios, exchange information. Guests welcome at all meetings and functions, except board meetings. For info, write

(continued on page 20)

LETTERS,

continued from page 5

used throughout the set. Apparently, Mr. Parks' set has lost its decal through refinishing or deterioration with age. By the way, the Steinite on eBay brought around $300-350 to the best of my recollection.

JOSEPH JACKSON

The set described by Richard Parks is a Steinite. I have one like it, except mine has been mutilated underneath with a Crosley 50 series coil and other work. You can tell Steinite items by those odd compression type tuning condensers that were used. The wood case is the same one used in the Steinite crystal sets. I have also seen a taller version of this Steinite case, about 3-1/2" high.

LANE UPTON
via e-mail

Steinite Tube Set
1500 Mile Range Guaranteed
Gets Stations in U. S., Canada and Cuba. Try it at our risk.
$12
10 DAYS' Free Trial!
8 x 7 x 4 In.
Greatest value on the market today. Wonderful power and volume. Highly selective, sharp tuning. Solid mahogany cabinet, beautiful finish. Uses dry batteries. Cost won't exceed two cents a day.
Try it ten days and if not delighted your money back without a word. Free descriptive literature shows users endorsements. Reference: Exchange Nat'l Bank, Atchison Savings Bank. Order today.
$12
STEINITE LABORATORIES,
16 Radio Building, Atchison, Kansas
Mfrs. Famous Steinite Long-Distance Crystal Sets $6; Two Tube Amplifier $15; 5 Tube Set $35; De Luxe Crystal Set, complete—headphones, aerial and ground, $10; Wave Trap $5. Literature free. Steinite Long-Distance Crystals 50c. SPECIAL OFFER—2 Crystals, 1 Catwhisker, 2 Hook-Ups — all for $1. ORDER TODAY.

The Steinite 1-Tuber—from a 1924 newspaper ad reproduced in Alan Douglas' Radio Manufacturers of the 1920s, Volume 3, p. 134.

Author Parks thanks all who wrote in with this identification. See also his comments at the end of the "Breadboarding" column in this issue.

AWA ANNUAL CONFERENCE

RIT CONFERENCE CENTER (formerly Thruway Mariott)
ROCHESTER, NY
AUGUST 28-31, 2002
THEME: 50 YEARS OF AWA—1952-2002

WELCOME BACK! At the 41st annual conference, collectors and history enthusiasts will convene, exchange equipment, and learn more about the development of radio and electronics. If you have never been to the yearly "reunion," why not give it a try? Rochester (Henrietta) is just north of upstate new York's beautiful Finger Lakes region, easily reached by car or plane. The site is 26 easy miles from the AWA Museum at Bloomfield.

Advance registration is encouraged to facilitate preassembly of registration materials and preassignment of flea market spaces. Your materials for advance registration will be included in the August issue of The OTB. There will be unlimited registration at the door.

The conference site is The Rochester Institute of Technology Conference Center. Formerly the Thruway Marriott hotel, this is the same facility where we've been running the conference for many years. It offers special nightly rates ($89.00 for a single, double or triple) one bloc of rooms that will be reserved for the conference until August 9th. It's first-come-first-served, so get your reservation in early. For info or reservations, call (585) 359-1800. The conference center has restaurant facilities, and other lodging and eating places are nearby.

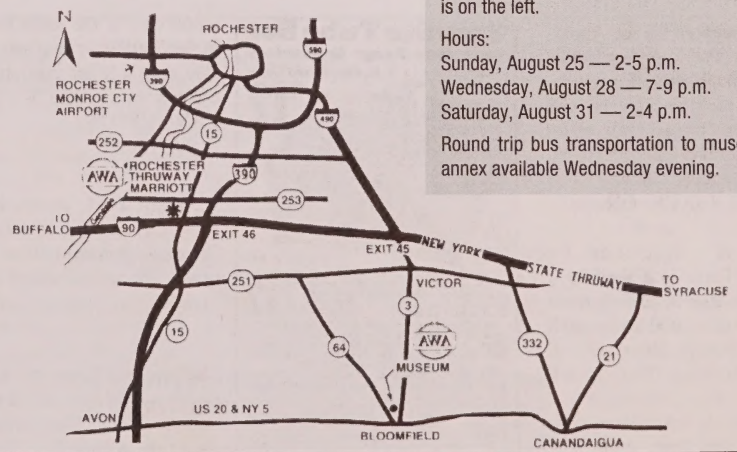
The hotel is reached from Exit 46 of the new York State Thruway (I-90): take I-390 north to NY 253 west, to NY 15 south. For visitors arriving by air, the location is about seven miles or 15 minutes from the airport. There is shuttle service, 6 a.m.-11 p.m. (specify the RIT Conference Center). If you take a cab, make sure the driver understands that you are NOT going to the RIT campus, but rather to the RIT Conference Center, which was formerly the Thruway Marriott Hotel.

Conference Chairperson
BRUCE ROLOSON

Program Chairperson
LAUREN PECKHAM

Registration
JOYCE PECKHAM

Contest Chairperson
GEOFFREY BOURNE



AWA ELECTRONIC COMMUNICATIONS MUSEUM
VILLAGE GREEN, BLOOMFIELD, NY

Refer to map at left. Directions from hotel: Right (south) on Rt. 15. At Avon (9.5 mi.), left (east) on RTS. 5 & 20. At Bloomfield (16 mi.), left at brown "Radio Museum" sign near Holloway House restaurant. Go approx. 200 ft. and park. Museum is on the left.

Hours:
Sunday, August 25 — 2-5 p.m.
Wednesday, August 28 — 7-9 p.m.
Saturday, August 31 — 2-4 p.m.

Round trip bus transportation to museum and annex available Wednesday evening.

FROM THE CONFERENCE CHAIRMAN

What a difference 6 months can make! Following the 2001 Conference, the only thing we knew for sure was that there *would* be an AWA 50th Anniversary Conference: we just didn't know where.

By now you know that we will be returning to the Rochester Institute of Technology Conference Center for another year. This may be the perfect year for members who haven't attended our conference in some time to consider doing so. As always, the program schedule is a full one, including topics such as military cipher machines, transistor radio development, Stromberg Carlson history, cone speakers, and more.

Of course the Conference Theme is "50 Years of AWA." So maybe the fact that our old locale is now owned by Rochester Institute of Technology is auspicious.

There will again be the flea market, book fair, ladies' tea, ladies' luncheon, old equipment contest, annual sightseeing excursion, main equipment auction, and vacuum tube auction. Allow some time to visit the AWA Museum and Annex also.

The conference runs from August 28th through the 31st. That is a week earlier than last year, so mark your calendars.

See you there!
Hugh Davey

PROGRAMS

THEME: 50 YEARS OF AWA—1952-2002

PBS VIDEO: DECODING NAZI SECRETS FEATURING THE FAMOUS ENIGMA CYPHER MACHINE *Presenter: Tom Perera*

AMATEUR RADIO IN DISASTER RELIEF *Presenter: Bart Lee*

KEY AND TELEGRAPH SEMINAR *Moderated by Tom Perera*

MOONLIGHT RESTORATION FORUM *Hosted by Marc Ellis*

HISTORY AND RESTORATION OF CONE SPEAKERS *Presenter: Buford Chidester*

THE ENIGMA CYPHER MACHINE: HISTORY, OPERATION AND DESCRIPTION *Presenter: Tom Perera*

HISTORY OF THE STROMBERG-CARLSON COMPANY *Presenter: Lud Sibley*

REVIEW OF AMATEUR OPERATION *With Mike Raide, W2ZE and Bob Raide, W2ZM*

AWA TOP AWARDS BANQUET —*"50 Years of the AWA" slide presentation provided by Dick Ransley*

THE LIFE OF HUGO GERNSBACK *Presenter: Tom Peterson*

ZENITH TRANSISTOR RADIOS: EVOLUTION OF A CLASSIC *Presenter: Norm Smith*

Among the many other activities in store for you are the flea market, book fair, ladies' tea, ladies' luncheon, old equipment contest, annual sightseeing excursion, main equipment auction, vacuum tube auction, bus trip to AWA museum and annex, and the AWA Members' Forum conducted by President Bill Fizette.

Note: there will be no separate communications equipment auction this year. Communications gear will be included in the main equipment auction.

COMPLETE CONFERENCE SCHEDULE AND REGISTRATION MATERIAL WILL BE INCLUDED IN THE AUGUST ISSUE OF *THE OTB*

SEE NEXT PAGE FOR OLD EQUIPMENT CONTEST CATEGORIES

BY GEOFFREY BOURNE AND RALPH WILLIAMS
CONTEST COORDINATORS

THE OLD EQUIPMENT CONTEST
2002 AWA CONFERENCE

50 Years of AWA – 1952-2002

The AWA Old Equipment Categories for the 2002 contest are divided into two major groups: Theme and Standard. The Theme categories reflect the Conference's central historical purpose: a review of the 50-year history of the Antique Wireless Association. This year, to celebrate this milestone in the history of the AWA, we will be doing something quite different from the previous contests. The theme categories will be essentially the same as the standard categories but with one difference. To enter in the theme category the item must have won a blue ribbon at a previous AWA contest.

Here's another chance to display your prized artifact. Don't wait another fifty years to show your favorite radio!

THE THEME CATEGORIES

1. PASSIVE RECEIVERS
Any detecting device, not including vacuum tubes or solid state amplifying devices whose purpose is to convert radio energy into intelligent signals.

2. 1920S SUPERHET RECEIVERS.
Any receiver which employs the superheterodyne circuit and is from the 1920's can be entered here.

3. 1920S TUNED RF RECEIVERS
During the 1920s, the TRF set was one of the most widely marketed. It was sold in kit form, factory assembled or built from scratch form plan in a magazine. This is where you would enter a Freshman Masterpiece or an AK 20 and so on.

4. 1920S REGENERATIVE & REFLEXED RECEIVERS
Many manufacturers employed different circuits to improve the receiving capabilities of their radios. The regen and reflex are among the many circuits that were used. Bring in a fine example of this type of radio.

5. CATHEDRALS & TOMBSTONES
These are probably the most recognized antique radio styles. Just about everyone remembers someone in their family who owned one. So bring in that Philco 90 or Zenette or any other cathedral or tombstone style radio.

6. AWA HISTORY & ARTIFACTS.
This would be the category to enter a retrospective of your remembrances of the AWA. Old photos of past meets or anything relating to the history of the AWA. Be creative.

7. SPEAKERS
A. HORN: Any sound reproduction device can be entered here as long as it employs a horn or bell for sound amplification.
B. CONE: When radio sets obtained greater power output levels the magnetic speaker unit was designed with large surface areas for better sound reproduction. There are many fine examples of this type of speaker. i.e. Tower Adventurer, Western Electric…

8. TUBES
In this category you can display a single tube or a collection. There should be a common theme with the display, such as historical significance, technological break through, etc. The display should tell a story.

9. SPARK TRANSMITTERS & ARTIFACTS
Do not hesitate to enter a major piece of spark equipment if you think it is rare or historically significant.

10. VACUUM TUBE TRANSMITTERS & RECEIVERS
Some of the sets for this class are old, some not so old, most home-built. While the predominant entries have been amateur-operated, commercial equipment is welcome.

THE STANDARD RECEIVER CATEGORIES

11. PASSIVE RECEIVERS
See Theme Category 1

12. 1920s SUPERHET RECEIVERS.
See Theme Category 2

13. 1920s TUNED RF RECEIVERS
See Theme Category 3

14. 1920s REGENERATIVE & REFLEXED RECEIVERS
See Theme Category 4

15. CATHEDRALS AND TOMBSTONES
See Theme Category 5

16. RADIOS IN DISGUISE
Entries here can range from an end table radio to a lamp radio. There are many different styles and variations. Some fine examples would be an Porto bar radio, Melody Cruiser, ship radio, or any radio made to look like something else.

17. SPEAKERS
See Theme Category 7

18. TEST EQUIPMENT
There were many makers of test gear. A short list would include Supreme, Superior, Hickok, Weston, Read-Rite, General Radio, Simpson, Rider, RCA, And too many others to list. So surprise us, bring in the unusual or the common.

19. TUBES
See Theme Category 8

AMATEUR RADIO

20. SPARK TRANSMITTERS & ARTIFACTS
See Theme Category 9

21. VACUUM TUBE TRANSMITTERS & RECEIVERS
See Theme Category 10

THE CRAFTSMAN CATEGORIES

22. RESTORATION OF APPEARANCE
The purpose of this category is to display examples of rebuilding and refinishing the cabinets and containers that were used to house radio receivers. There is no requirement for a particular kind or size of set to be entered. A description of the work done will be considered an important part of the entry. The critical element is the appearance of the radio, including woodwork, escutcheons, dials, knobs and other visual details.

23. RESTORATION OF OPERATION
This is the category for those craftsmen who artfully substitute modern components for old failures. The new electrolytic in the old can is an excellent example. Another is the transistorized tube. Perhaps the replacement of pot-metal parts by silver-gray-colored epoxy castings has been accomplished by one of us. If so, please bring in the set that incorporates that restoration. An entry should be accompanied by documentation showing the basis of the update that preserves the quality of the original.

24. NEW OR REBUILT
Previously we have encouraged entries that showed the conference attenders how substitutions and reconstructions would provide vital parts or pieces. We also encouraged craftsmen who had made an old function come alive again to bring their work for review. Do you remember the Federal receiver that was entered several years ago and the operating Marconi coherer detector from the year before last? We want to continue that tradition so bring in your retrospective designs and your reconstructions. There is no requirement for particular devices or circuits.

THE CONTEST AWARDS

Elle Craftsman Given in memory of Bruce Elle to a builder of a high-quality radio receiver of an old or new type.

Matlack Transmitter Given for excellence in constructing or restoring transmitting equipment.

Display Recognizes the informational value and quality of an exhibit in the contest at the AWA conference.

Thompson Best of Show Awarded in honor of early amateur Eunice Thompson, W1MPP, for the top entry in the Old Equipment Contest at the Annual Conference.

People's Choice Awarded to the entry that receives the most favorable votes from attenders and visitors to the contest. All entries including displays are eligible for this award.

MUSEUM NEWS

Visit us on the Internet at http://www.antiquewireless.org

OFFICERS

Director	Thomas Peterson, Jr.
Deputy Director	Allan Pellnat
Secretary	Edward Gable, K2MP
Treasurer	Stanley J. Avery, WM3D

BOARD OF DIRECTORS

Stanley J. Avery, WM3D
Dr. Thomas Ely
Ronald Frisbie*
Edward Gable, K2MP*
Prof. William Hopkins
Lauren Peckham*
Allan Pellnat*
Robert Perry
Thomas Peterson, Jr.*
Ronald Roach
Ronald Walker
Morgan Wesson

**MUSEUM CONTACT*

also on AWA Inc. Board of Directors

For all inquiries about the Museum and its operation, contact Edward M. Gable, Curator, 187 Lighthouse Rd., Hilton, NY 14468. Phone: (716) 392-3088, e-mail: k2mp@eznet.net.

The AWA Electronic Communications Museum is an IRS 501(c)3 charitable organization.

From the Curator

Ed Gable, K2MP/W2AN

Hello from your museum and your museum staff. Let's get right to the news. First, there is no news from NY State on the museum Chartering process. In this case no news is good news as we're still expecting no issues when our application gets to the top of the pile for processing. This really isn't holding up any programs currently in process, but does effect future plans in the area of grants and the like.

We had a step backwards in the new building investigation when our land surveyor and site planner suddenly decided to retire and close his business. We did receive a full refund of our paid fees, but now need to start that process over again. As a refresher, this was the study of constructing a new building on our existing land adjacent to the present annex. In the meantime the acquisition of existing buildings continues as an option, with Morgan Wesson keeping a watchful eye for opportunities.

Your current museum continues to be upgraded and the May 5th opening saw enhanced displays, including a nice showing of the first cellular telephone, the addition of the Bell transistor radio, an upgrade of the now permanent Armstrong exhibit, better lighting in the 1925 radio store, an all new display on the progressing of Morse code through the ages and a 50th Anniversary display that includes a new 50-year-old operational ham station using Bruce Kelley's HRO-50. It will be on the air using our W2ICE callsign.

I am pleased to have two new museum guides this year but we can always handle more. A museum guide training session is planned May 19th at 2:00 p.m. Although the goal was to have most changes in place for the May opening, plans call for work at the museum throughout the summer as we take advantage of the warmer WX. To that end, a Saturday work party is scheduled for Saturday, July 13th, at 9:00 a.m., for those wishing to help out but unable to attend sessions during the week.

Work at the annex also continues, where this week we had an almost never-seen situation. Due to the dedicated work of Allan Pellnat and others in his crew, there has been a huge effort to clean out excess junque from the parts room. They touched and moved and sorted items that haven't seen the light of day in over 20 years! We ended up with perfectly clean work surfaces and some empty shelves. Yes, for the first time we had more shelves than stuff to put on them! This also made for a larger than ever quantity of non-collection items available for the AWA Spring meet fund raising sale.

I need to mention the work going on at the Annex library as well. Doc Ely continues to sort, catalog and store the vast

amount of periodicals and magazines. These are really looking nice and accessibility is much improved. The other activity involves the paper files containing our wonderful collection of original documents, drawings, papers, data sheets and letters. Bob Perry is doing a great job of going through these files, sorting them by subject matter and generating a searchable index. My goal is to have these and other indexes on the AWA web site within the year. It was nice working many of you from W2AN during the AWA old tyme operating events. We have a new QSL card and I'm slowly QSLing 100%. If you return a card it will be posted in the museum ham area. The timing of this issue is such that I cannot announce the result of the AWA Spring meet at the Annex, but I'm sure it was great, as always.

S'long for now...For your museum crew,

Ed Gable

Ed Gable, K2MP/W2AN
Museum Curator

RECENT MUSEUM DONORS

(compiled April 3, 2002)

Wally Brown, K1TQ	Hallicrafters SX-9, SR-400, NC-VX501, Millen 90901, much more.
Frank Wiethuechter	Capehart 16" TV, Excellent, Philco 121, 20
John Zimmerman	Belmont BC-224F w/dynamotor
Edward Ford	Gonset Communicator
Make McNamara	Collins R-390-A
Trepanier Family	Complete Ten-Tec station, TS-930S, Drake 4B line, much more
John Kennedy	Drake UV-3 w/ all acc.
John Zima	Large collection test equipment, receivers
David Canavan	Century Tube tester
George Platteter	New Display case for Bell Labs Transistor
Ron Walker	Memory keyer for new CW display

New Museum Artifacts

By Ed Gable, K2MP/W2AN

The museum was honored with the donation of several significant artifacts late last year. Let's first look at the world's first transistor radio donated by long time collector and AWA member Jim Troe. It was 1948, and Bell Labs announced the invention of the transistor by Bardeen, Brattain and Shockly. Originally developed for audio work in the telephone industry, the first transistors could not operate way up at radio frequencies. So Bell had problems marketing the new device outside of AT&T for other than hearing aids.

In 1951, Mr. F.E. Radcliff of Bell's Electronic and Television research development

Ed Gable (left) receives first transistor radio from Jim Troe.

The first cellular telephone. Yes, it's serial number 1!

Department developed the first fully working, superheterodyne broadcast receiver. There was no attempt to miniaturize the receiver, as accomplished three years later by Regency in their TR-1 development. It did, however, prove the adaptability of the transistor in other than audio applications and led to the licensing of the device to outside users.

The Radcliff/Bell receiver, through some lucky circumstances, survived the common practice of discarding old engineering junk and ended up in the Jim Troe collection. Also with the receiver is the original engineering report that clearly reveals the problems in making the devices work at high frequencies. A spare Bell transistor, type A-1729, from the first pilot run, is also part of the collection and is probably one of the earliest such devices in existence today. We are delighted to have it and it will be a featured and permanent display starting in May, 2002.

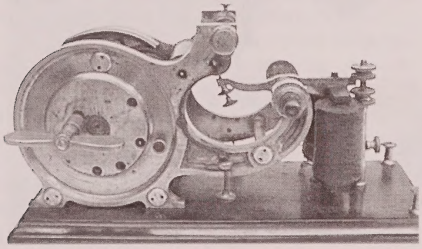
The next significant donation, again through the generosity of Jim Troe, is the world's first cellular telephone. The period is early 1970s, when the growing mobile telephone industry was confined to only a few radio channels per city. AT&T developed a scheme to share the same frequencies with multiple users by handing off mobiles to different low power base stations.

Since there was an anti-trust problem at that time involving Bell and its W/E manufacturing arm, the company had to search the world for a partner to build the system. No U.S. manufacturer was interested in this risky scheme and only the OKI company in Tokyo, Japan, would take on the task.

In 1974, fifty mobile radio telephones, using the now familiar cellular concepts, were put into trial operation in Chicago. Some of you who live there may remember the unusual circular antenna array that was installed on top of the Chicago Bell building. The trial was very successful and cellular telephone is now part of everyday life.

When the trial radios were about to be discarded, a Bell program manager said "save me serial number 1." That person was Jim Troe, and serial number 1 is now in the AWA collection. Great foresight, Jim.

Now we move on to two really unusual early telegraph registers. These were donated by *AWA Review* Editor and noted key collector Tom Perera, W1TP. The first item is a circa 1860 telegraph register of the Western Union type. It is unusual because of the weight-driven clockwork mechanism used to drive the paper tape. The instrument actually has its original W/U wood carrying case with an embossed brass plate carrying W/U identification.

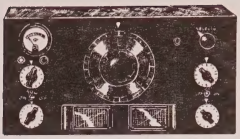


Circa 1860 WU telegraph register donated by Tom Perera.

The other register is of the Steljes patent and manufactured by The Typewriting Telegraph Corporation Limited, London. It is numbered 476. This, too, has a unique dual weight driven clockwork. What sets this unit aside from other registers is that it accepts DC voltages corresponding to the Morse code and converts them into movements of a type-wheel. The wheel prints the actual letter onto the moving paper tape. This is really a pioneering instrument. An ongoing donation that will probably end up as the largest number artifacts donated by one individual is still coming in from old time AWA'er J.W. Stedenfeld of Washington, NJ. Steddy's collection is huge and widely varied, including unusual tubes, wireless, battery sets, ham items, and on and on. We'll have more detail on this in a future issue.

I certainly want to thank Jim and Tom, as well as all of the other donors, for entrusting their artifacts to the AWA Electronic Communication Museum. Be assured that the AWA Museum will always be is a safe, stable and prestigious depository for your precious collectibles.

The Communications Receiver



EDITED BY **WILLIAM FIZETTE, W2DGB**, RR 1, BOX 55, HENRYVILLE, PA 18332
PLEASE INCLUDE SASE FOR REPLY.

The 1937 National NC-81X

In the last issue, we reviewed National Company slide-rule dial receivers. This column deals more detail with the NC-81X, the amateur-band version of the NC-80X general coverage receiver. Both radios came about as the result of a search for a design that could fill the slot once occupied by the FB-7, and that would feature low price with high-order performance.

As had come to be expected of the National Company products, the radios that emerged featured some new and unique design ideas. Foremost among these was a wide-range crystal filter and a high-frequency i.f. The other goal was also met; the receivers were indeed relatively low in price, a welcome development to cash-strapped amateurs in the lean years of the 1930s.

The National 81-X amateur band receiver.

History

In *QST* for June, 1937, James Millen of the National Company wrote that James Bacon of his staff was working on a design for a low-priced communications receiver to supersede the famous FB-7, by now obsolete. One key feature that emerged from the research was the concept of a high-frequency i.f. (1560 kHz). Besides eliminating images, the feature made it possible to incorporate a wide-range crystal filter, continuously variable from 300 cycles to 7 kc, which could be left in the circuit at all times. (If you wish to read further, see the article by Dana Bacon in *QST* for September 1937.)

Another striking change from the general design parameters of the times for communications receivers was the use of an AC-DC circuit, made possible by a new beam-power amplifier which would give two watts of audio at a low plate voltage. Two models were announced in the September 1937 issue of *QST,* the general coverage NC-80X and the amateur version, the NC-81X.

To cut costs, the power transformer, the r.f. stage, and other amenities such as an S-meter were omitted. A sliding coil tray taken from the NC-100 design was used, but it was considerably simplified, having only a ten-compartment cast aluminum base and a thin aluminum cover plate. The standard National PW dial and gear box were replaced with a slide-rule dial and a stamped-steel gear box containing a two-speed drive, giving 16 to 1 for quick tuning, and 80 to 1 for bandspread use (*National Catalog*, 1937 edition.) A nice design touch was the use of a mirror strip on the scale, used with the knife-edge pointer to minimize parallax error.

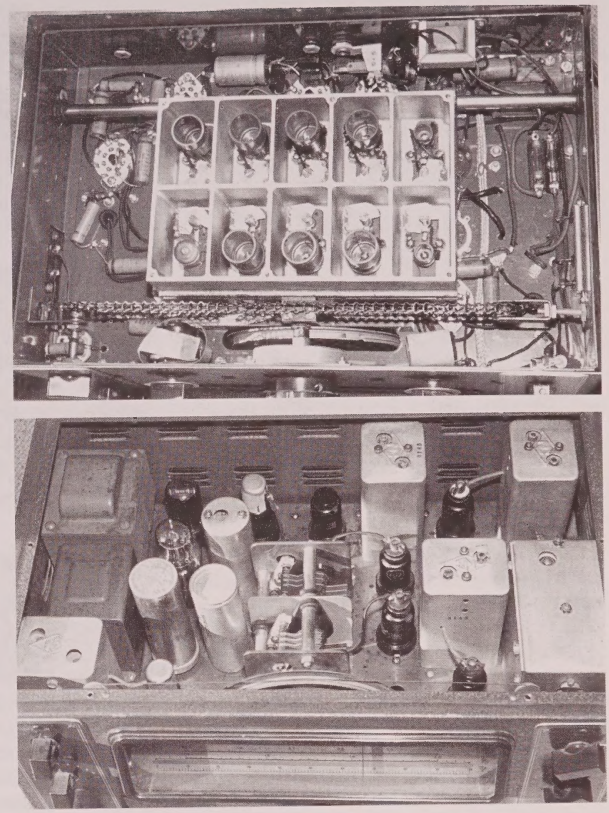
In researching this article I became curious about the selling price of $88.00 amateur net as compared to some other ham receivers of mid-1937. The Patterson PR-15 sold for $109.50; the HRO for $179.70; the NC-101X for $129.00; the RME-69 for $151.20; the Super Skyrider for $99.00; and the ACR-155 for $74.50. The Patterson, the NC-101X, and the RME did include a speaker in the price. The ACR had the speaker built into the cabinet. The NC-80/81X sets included a speaker "chassis," that is, the speaker frame without the metal cabinet, which had to be purchased separately. It would appear that the -81X was indeed price-competitive.

One interesting side note regards Millen's efforts to cut costs by using a good quality off-the-shelf BC tuning capacitor. The substitution failed due to backlash and other problems. To meet delivery schedules, they were able to use a few in

the first NC-80X receivers by careful refitting, but that brought the costs up to the level of the standard National PW capacitor. Subsequent production used the National units.

Another observation on Millen's cost-cutting revolves around his use of an AC-DC circuit. At first glance, this is a hallmark of a "cheap" radio. If you remove a power transformer from a circuit, you will save not only the cost of the transformer but also the cost of installing it. Millen's argument (*QST* September, 1938) was that performance considerations took precedence, and that a good AC-DC circuit has many advantages over a transformer-operated circuit.

Among these was absence of transformer-generated heat and hum, improved regulation, and increased stability on the higher bands. Millen also pointed out that there were significant extra costs in insulating the chassis from the outer cabinet. The implication was that the AC-DC circuit was more expensive than the alternative. Without the numbers it is difficult to comment further.



Views above and below the chassis show that the legendary National quality construction is evident even in this relatively inexpensive set.

Restoration

The -81X that I was privileged to work with was in good shape and appeared to have been well taken care of. The only servicing that had been done was limited to replacing the filters and one additional capacitor. Additionally, the previous owner apparently did not have a matching speaker, so he wired an output transformer into the circuit under the chassis. Other than that the set was original.

I elected to leave the production capacitors and resistors in place, on the basis that (1) the radio is somewhat rare, and (2) if we rework all the radios, the next generation of owners won't know what an original set looked like in its entirety. (Who wants to take off the bottom plate of an unusual old set and see an assortment of orange drop capacitors?) After I reformed the filter caps, I was able to get the receiver to work, even with the 65-year old parts, and AM and SSB stations could be copied.

I examined the set carefully for signs of other cost-cutting measures, and was unable to find anything. All sheet metal and all components were of the same high quality as used in the expensive HRO and -100 series receivers.

One interesting observation was that each of the five amateur bands of the day began at precisely at 10 on the dial scale, and ended at 90. Of course that was one of the hallmarks of National precision, and is also evident in the HRO coils.

If you will refer to the diagram you will see an alternate power circuit with an isolation transformer. This set did have the transformer, converting it from an AC-DC receiver to a strictly 115 v.a.c. model. Production versions had the same hot-chassis isolation construction that was

described in the recent article on the National NC-44, protecting the user from AC line hazard. Both the top and bottom plates were screwed on, requiring conscious effort to get into the "hot" chassis inside.

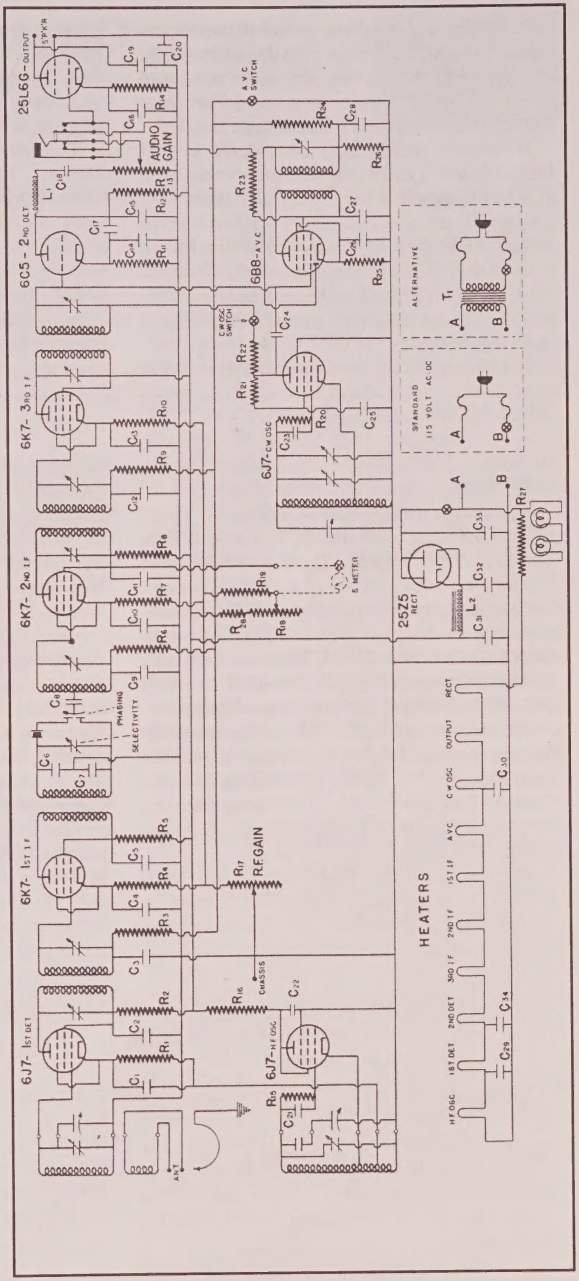
Performance

With a properly matched antenna input, the three i.f.s, and the wide-range crystal filter, this receiver must have done a good job on the low-frequency amateur bands of the 1930s. Millen also claimed that the increased stability resulting from the well-regulated power supply (40 mFd of filter capacitance) led to "remarkable" performance on ten meters, and that the -81X would hold its own there against any receiver on the market. An outboard preselector might have helped on the higher bands, but amateurs of the day were notorious home-brew artists and that should not have been a major problem.

In Closing

The concept engendered during the 1930s that AC-DC radios were "cheap" arose when the need for low-priced broadcast radios became very evident in if the radio manufacturers were to survive the Great Depression. The little AC-DC sets that resulted were indeed "cheap" when compared to the Atwater-Kents and other pricey radios of the day. Yet they worked quite well on the BC band, and a lot of them were sold. The association of AC-DC design and cheapness stuck, however, and National had to overcome that perception.

The -80X and -81X were good quality communications receivers with unique design features, including the AC-DC circuit. A well-built ten-tube receiver, using quality parts, with a wide-range crystal filter, three i.f.s, complete



Schematic of the 81-X. Note that a factory-installed isolation transformer (bottom right) was an option.

with speaker, and weighing around 40 pounds can hardly be considered cheap, even though it sold for only $88.00. And if a user was really concerned about the AC-DC feature, for a few dollars more he could have an isolation transformer installed.

However, technology and world events moved forward, and a year later the set was listed at $99.00 net, still a very acceptable price. The last significant advertising that I can find is in the January 1939 *QST*. By May of 1939, Jim Millen had left the National Company and the -80X and -81X quietly faded out, to be replaced by lower-quality and lower-priced pseudo-communications receivers, such as the NC-44.

But Millen and his team had managed to come up with another extraordinary design in a remarkable series of communications receivers. One wonders what might have happened if he had stayed with National, and been given free reign to develop more of his unique ideas.

Those who would like to read more about the National NC-81X might like to look at John Dilks' "Old Radio" column in the April, 2002 issue of *QST*.

References

Millen, James Letters in *QST*, 1937 and 1938

Hanlon, James T., W8KGI Personal communication.

AWA NEWS, *continued from page 9*

the Society at P.O. Box 82379, Portland, Oregon 97282-0379.

•Oklahoma Vintage Radio Collectors—Meets second Saturday each month, Hometown Buffet, 1012 S.W. 74th St., Oklahoma City, OK. Visitors welcome. Dinner/socializing, 6 p.m.; meeting at 7 p.m. Membership, $12/yr., includes monthly *Broadcast News*. Info: SASE to OKVRC, P.O. Box 50625, Midwest City, OK 73140-5625; or call (405) 755-4139 or (405) 732-6070; or e-mail fkarner@mmcable.com.

•Ottawa Vintage Radio Club—Meets monthly (except June and July) in Conference Room, *Ottawa Citizen*, 1101 Baxter Rd., Ottawa, Ontario. Contact: Tom Devey, 601-810 Edgeworth Ave., Ottawa, ON K2B 5L5, (613) 828-5152. Membership: $10 Canadian/yr.

•Pittsburgh Antique Radio Society welcomes visitors to our Saturday flea market/contests in March, June, September, and December. An auction is included in September, and our annual luncheon/program is held the first Saturday in December. Our newsletter, *The Pittsburgh Oscillator*, is published quarterly. website: www.nb.net/~schaefer/pars.html For directions, specific dates, information call President Bonnie Novak at 412-481-1563 or write to Karl Laurin, 8111 Sally, White Oak, PA 15131.

•Society for Preservation of Antique Radio Knowledge—Meets at 7:30 p.m. the second and fourth Tuesdays of each month in the party room at Cassano's Pizza Parlor, 1700 East Stroop Rd., Kettering, OH. Membership, $18/year. Write SPARK Inc, P.O. Box 292111, Kettering, OH 45429; e-mail sparkinc@ juno.com or call John Pansing at (937) 299-9570.

•Texas Antique Radio Club—Meets alternate months in Kyle and Shertz, TZ. Contact: Ron Manning, President TARC, 133 East Huisache Ave., San antonio, TX 78212. Phone (210) 734-6831; e-mail ronmeg@gateway.net; website www.gvtc.com/~edengel/TARC.htm

AWA 50TH ANNIVERSARY COMMEMORATION
Your Help is Needed!!

The year 2002 is the 50th anniversary of the founding of the AWA, and we plan to issue a special supplement to *The OTB* commemorating our half-century history. It will be included with the upcoming May or August issue and selected material will also be posted on our web page.

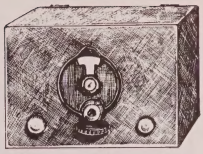
The quality and historical depth of this publication will depend, in large part, on contributions from you readers. We can't do this alone and we need your input. If you are able to share stories, reminiscences, pictures, etc, about AWA's activities over the years, please send them to me just as soon as possible. Don't be reluctant to include specialized subject material; there is a remarkable diversity of interests among our membership. All pictures and other material will be returned if a note requesting return is included.

Please address your contributions to: William Fizette, Project Coordinator, R.R. 1, Box 55, Henryville, PA 18332.

Questions? Contact me at w2dgb@enter.net or (570) 629-0637.

AMATEUR RADIO

EDITED BY **JOHN F. ROLLINS, W1FPZ**, HC 33, BOX 150, ARROWSIC, MAINE 04530
PLEASE INCLUDE SASE FOR REPLY.



Results of the 2002 Linc Cundall Memorial OT CW Contest

The 2002 Linc Cundall Memorial OT CW Contest was held during the last week of January and ended on January 27th at 2300 Zulu time. This year the equipment eligibility rules were expanded to consider any receiving and/or transmitting equipment up through the year 1946 as OT. This qualifies all the World War II radios for the OT multiplier in computing scores.

QRM conditions were mixed, depending on the band. Participation on the 160 meter band was pretty hopeless due to another contest going full swing. It looks like this activity may be permanent on 160, at least for a while. Dick, K5RG and Bob, AC5AM did manage a contact—the only ones reporting a top band QSO.

On the other hand, conditions appeared to be mostly favorable on the other bands. The new 80 meter band segment location (3550 to 3580 kHz) remained clear. The RTTY activity held forth above 3580 kHz. Incidentally, it was very nice to hear the AWA museum station, W2AN, Ed on 80 meters this year. Thanks Ed.

Propagation on 80 meters appeared to be mixed. Good results were reported out to the middle of the country, and north and south, but no east-west contacts were made. West Coast operators reported "nothing heard to the East Coast." The 40-meter band segment, 7030-7050 kHz. was quite active again and conditions seemed to be quite good, but again no east-west contacts. The 20 meter activity was down considerably this year.

After all the dust settled and the old bottles had cooled down, the winner of this year's Linc Cundall Memorial OT CW contest was VE3DKW. Heartiest congratulations, Mike. Where were you, Eddy? Mike used two vintage 1945 ARC-5 transmitters for 80 and 40 meters, running 20 watts on each, and a 1939 National HRO receiver. W2RS, Ray, and KJ8L, Steve, placed second and third respectively—good going!

Activity on each of the bands is shown below.

Band	160	80	40	20
Total QSOs	2	702	259	24

The total number of participants in this year's contest was 52 versus 56 last year. Our perennial DXer Jun, JH8SST/7 did not appear to be on this year, or most probably propagation conditions were not favorable across the Pacific. We hope that about does it for 2002. Many thanks for your notes and comments. Hope to see you all back next year.—73 JFR W1FPZ

TOP TEN CONTESTANTS

CALL	POINTS	CALL	POINTS
VE3DKW	450	W3CNS	312
W2RS	414	W9POC	306
KJ8L	408	W2AN	279
W4LN	405	AA9DH	276
W2LYH	396	WITSP	240

COMPLETE CONTEST RESULTS

CALL	TX	QSOs/Band 160	80	40	20	Total Points
W-1						
K1TMJ	'42 ARC-5		13			78
W1ZR	'55 VIKING II (MOD)		20	3	1	96
K1FI	'80 COLLINS (MOD)		10			40
NE1S	'34 TNT,'38 TRITET, MOD		16	10	5	191
W1YT	'40 6L6 XTAL		13	16		186

CALL	TX	QSOs/Band 160	80	40	20	Total Points
KA1CFQ	'29 HARTLEY		12			72
W1GIG	'39 SIG. SHIFTER		7			63
W1TSP	'29 HARTLEY		38			240
W1DDW	'42 MOPA-801-805		15	11		156
W1FPZ	'37 VFO-46-TZ-20		19			114
W-2						
W2RS	'41 SIG SHIFTER		27	16	3	414
W2LYH	'36 6K7-6V6-6V6-6L6		26	7		396
AA2CU	'37 COLPITTS-42			8		48
N2VO	'52 MOD		11	2		42
W2AN	'38 6V6-6V6-807		28			279
K2LP	'39 ECO-6L6-807-860		28	7		98
W2HBE	'29 HARTLEY		10			60
W2YIK	'29 HARTLEY		13	4		153
K2KK	'37 XTAL-6V6-6L6			14		112
W2LID	MOD		19	5		25
N2TWW	'29 TNT 01A		4			32
KE2O	'29 TNT, MOD		12	9		99
KB2E	'46 COLLINS 32V1		13	12		96
KB2PLW	'38 XTAL-6L6		19	6		144
W-3						
KB3SI	MOD		6	2		24
W3CNS	'36 6V6		16	10		312
WB3HLH	'39 6L6 XTAL		3	9		108
KD30R	'38 ECO-6L6			3		12
W-4						
W4LN	'39 6L6-807		24	16		405
AA4RM	'41 STANCOR 69		19	2		156
W4VBX	'38 6J7-6L6		7	2		81
K4LJH	'42 ARC-5			15		90
W-5						
AC5AM	'38 807 Hartley	1	18	9		441
K5RB	'29/'38/MOD	1	2	5		46
K5CF	MOD		6	1		38
W-6						
W6TDP	'37 UTAH UAT-1				3	24

Continued on page 24

RADIO REPRODUCERS

EDITED BY **DAVE CROCKER**, 35 SANTUIT POND RD., #4B, MASHPEE, MA 02649
PLEASE INCLUDE SASE FOR REPLY.

The Majestic Celluloid Horns

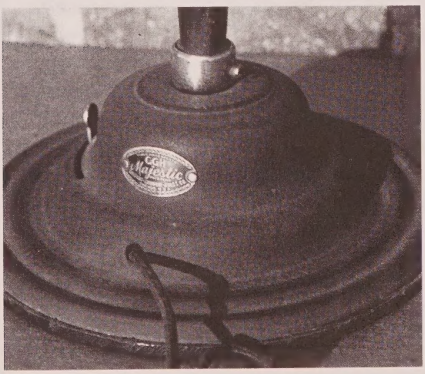
The familiar Majestic horn speakers were the first radio-related product of the Grigsby-Grunow-Hinds Company of Chicago, which originally sold celluloid automobile visors. These first horns, offered in August of 1924, were the Model BG (Baby Grand) and the Model WG-10 (Home Concert). Both featured one-piece bells and necks made of an opaque ebony material which Majestic referred to as "Pyralin."

The Baby Grand was the smallest and was unique in its "C" shaped neck and rectangular cast base. The Model WG-10 had a gooseneck design and flat, round cast base. It stood 22 inches tall and had a 13-inch bell. Its $12.50 price put it in the less-than-expensive market.

In 1925, Majestic added three more versions of its Pyralin horn speakers: the Model WG-20 which featured a translucent mahogany-tinted horn and neck; the Model WG-40 which featured a transparent, cream-colored "Japanese Pearl" neck and bell; and the Model WG-50 having a transparent, white, "Mother-of -Pearl"

The Japanese Pearl (cream color) Pyralin horn speaker.

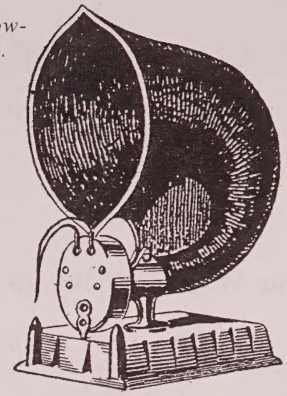
The GGH Mahogany celluloid horn speaker.



This base was used on both the Model WG-10 and WG-20 speakers

The taller base of the GGH Models WG-40 and WG-50 speakers.

neck and bell. These last two models had higher (3-3/4 inch tall) bases than the other horns, and sold for $17.50 and $20.00 respectively. All of the bases had a slot and a lever to adjust the loudness and tone of the reproducer. All GGH horns had their Pyralin bell and necks manufactured in two halves, then cemented together.



The unique Grigsby-Grunow-Hinds Model BG (Baby Grand).

While the Japanese Pearl and the Mother-of-pearl models are highly sought after, the small Baby Grand is the prize. In all my years of collecting I've never seen one for sale or heard it talked about.

By 1926 Grigsby-Grunow-Hinds realized the horn speaker was doomed to obsolescence and went on to manufacture, and successfully market, its famous line of battery eliminators. This product made the Majestic name a household word.

AMATEUR RADIO, *continued from page 22*

CALL	TX	QSOs/Band 160	80	40	20	Total Points
W-7						
W7LNG	MOD		1	1		4
W7LOG	'43 ARC-5		1			6
W-8						
WD8OFB	'29, '39, MOD		1	1		12
W8ZNX	'29 TNT-211		9			81
W8KGI	'40 NAVY COMMAND TX		12	4		162
KJ8L	'29 TPTG, 39 TCS. ART-13		32	13	5	408
W-9						
W9QZ	'29 HARTLEY		21			176
N9TT	'40-BC-375, MOD		18	1	2	74
W9POC	'40 6V6-807-MOD		17	12	3	306
AA9DH	'45 MILLEN EXCITER		17		1	276
W-0						
W0VLZ	'39 6J5-6L6, MOD		6	1	1	112
KB0R0B	'29 HARTLEY-210		15	3		204
VE-3						
VE3RSA	'29 HARTLEY		11			132
VE3HN	MOD		17	3		84
VE3BHW	'45 ARC-5		18			152
VE3DKW	'45 ARC-5s FOR 80,40		32	16		450

BY D.K. OWENS

OHIO'S RADIO INDUSTRY IN THE 1920S

Manufacturers of Receivers

Ohio in the 1920s was the scene of much activity in the manufacture of radio parts and receivers. Of the more than 500 companies claiming to be manufacturers of radio receivers in 1925 (1), I have identified 60 which were located in Ohio. Two-thirds of these manufacturers were located in just 3 cities: Cincinnati (30%), Cleveland (27%) and Toledo (12%). The rest were scattered around the state. Several radio companies formed in the 1930s are not included in this listing.

Most of these firms began with high expectations in the boom days of the 1920s, but few lasted past 1930. Some, like Precision and Day-Fan, were bought out and their products continued under different names, but most disappeared leaving barely a trace. Crosley became a giant, making everything from radios to refrigerators and automobiles. Midwest found a special niche and remained small. Both companies lasted into the 1950s.

Certain companies, such as Hartman and Air-

Table 1 - Ohio Receiver Companies

A-C Electrical Mfg. Co.	Dayton	1922-29	Hartman Electrical Mfg. Co.	Mansfield	1925-27
Ainsworth-Gates Radio Co.	Cincinnati	1924-25	Higby-Avery Co.	Columbus	1921
Air-Way Electric Appliance Co.	Toledo	1922-26	Independent Radio Labs.	Cleveland	1925
Akradyne Radio Corp.	Cleveland	1926	Irving Radio Corp.	Columbus	1925-26
Bird Radio Corp.	Cincinnati	1925	Kodel Radio Corp.	Cincinnati	1924-27
crystal sets			Maple Radio Shop	Mt. Vernon	—-
Bosworth Electric Mfg. Co.	Cincinnati	1925-27	Mazda Radio Mfg. Co.	Cleveland	1924-26
Brockway Laboratories Co.	Toledo	—-	Mellodyne Radio Co.	Cincinnati	1926
Brush Pottery Co.	Zanesville	1926	Merrill Mfg. Co.	Toledo	—-
crystal sets			Meteor Radio Laboratories	Piqua	1925
Carter Mfg. Co.	Cleveland	1924	Midwest Radio Co.	Cincinnati	1921-54
Cleartone Radio Corp.	Cincinnati	1923-30	Ohio Stamping & Engr. Co.	Dayton	1925
Cleveland Auto Accessories Corp.	Cleveland	1925	Precel Radio Mfg. Co.	Toledo	1924-25
Cleveland Products Co.	Cleveland	1924-25	kits		
Columbia Radio Co.	Youngstown	1922	Precision Equipment Co.	Cincinnati	1919-23
Concert Radiophone Co.	Cleveland	1925	Premier Radio Corp.	Defiance	1925-27
Corcoran Lamp Co.	Cincinnati	1925	Prima Products Corp.	Cleveland	1926
Crosley Radio Corp.	Cincinnati	1922-56	Randle Radio Co.	Cincinnati	1925-26
Cussins & Fearn Co.	Columbus	—-	Roll-O Radio Corp.	Cincinnati	1924
Dayton Fan & Motor Co.	Dayton	1922-29	Sears Mfg. Co.	Cleveland	1925
Doron Bros. Electric Co.	Hamilton	—-	Service Radio Co.	Cincinnati	1923-24
Duck, Wm. B. Co.	Toledo	1923-26	Silverset Radio Co.	Cincinnati	1925
Empire Phono Parts Co.	Cleveland	—-	Silvey Electric Co.	Dayton	1926
Faraway Radio Co.	Cincinnati	1924-26	kits		
Fulton Electric Mfg. Co.	Toledo	—-	Simplex Radio Co.	Sandusky	1925-36

478 SYCAMORE DRIVE, CIRCLEVILLE, OH 43113

TABLE 1, CONTINUED

Stanley Radio Co.	Cleveland	1924
Sterling Electric Corp.	Cleveland	—-
Sterling Mfg. Co.	Cleveland	1929-31
Sunbeam Radio Co.	Lima	—-
Sypher Mfg. Co. kits	Toledo	1924-26
United Metal Stamping & Radio Co.	Cincinnati	1924-26
United Reproducers Corp.	Springfield	1929-30
Van Horne Co.	Franklin	1929-31
Victoreen Radio Co.	Cleveland	1929-30
Volotone Mfg. Co.	Minerva	1926
Wagner Hardware Co.	Mansfield	1925
Walker, Geo. W. Co. kits, parts	Cleveland	1926-30
Wippel-Raine Radio Co.	Cincinnati	1925-26
WorkRite Mfg. Co.	Cleveland	1923-29

Table 2 - Ohio Radio Parts Manufacturers

Speakers, Horns, Headsets

A-C Electric Co.	Dayton	
Claravox Co.	Youngstown	
Cleartone Radio Co.	Cincinnati	
Crosley Radio Corp.	Cincinnati	
Davis, J.M., Co.	Cleveland	
Dual Tool Co.	Cleveland	
Grant Electric Co.	Cleveland	
Guarantee Specialty Mfg. Co.	Cleveland	
Hartman Electrical Mfg.Co.	Mansfield	
Kodel Radio Corp.	Cincinnati	
Liberty Metal Prod. Co.	Berea	
Mazda Radio Mfg. Co.	Cleveland	
Miller Rubber Co.	Akron	Horn bells
Ohio Radio Mfg. Co.	Cincinnati	Headsets
Simplex Radio Co.	Sandusky	
Teagle Co.	Cleveland	Phono adapter
United Reproducers Corp.	Springfield	
Wilson Utensil Co.	Dayton	
WorkRite Mfg. Co.	Cleveland	

Tubes

Air Scout Tube Co.*	Trenton	
Barkelew Electric Mfg. Co.	Middletown	
Cussins & Fearn Co.	Columbus	
D.F.P. Vacuum Products Works		Toledo
Mazda Radio Mfg. Co.	Cleveland	
Myers Radio Tube Corp.	Cleveland	
O'Connor & C.	Cleveland	Tube rebuilding
Ohio Radio Sales	Cleveland	Tube rebuilding
Par Tube Co.	Newton Falls	
RSK Co.	Cleveland	
Shelby Tube Co.	Shelby	
Specialty Appliance Co	Cleveland	Rectifier tubes
Sunlight Lamp Co.	Newton Falls	
Testeed Products Co.	Cleveland	
Thoria Tube Co.*	Middletown	
Van Horne Co.	Franklin	

**Made by van Horne*

Cabinets and Radio Furniture

Art Cabinet Works	Mount Vernon
Bartholomew, G.A.	Cleveland
Cincinnati Auto Body Co.	Cincinnati
Columbus Radio Cabinet Co.	Columbus
Harponola Co.	Celina
Holtzman, Henry & Sons	Columbus
John Jesse Mfg. Co.	Bryan
Miami Cabinet Co.	Yellow Springs
Mitchell Furniture Co.	Cincinnati
National Cabinet Co.	Dayton
Perkins-Campbell Co.	Cincinnati
Pilliod Lumber Co.	Swanton
Price, Albert Co.	Coshocton
Sextro Furniture Co.	Cincinnati
Stradivara Co.	Coshocton
Weber Electric Works	Cleveland
Whetzal, Walter M.	Westerville

Antenna Equipment

Adamant Porcelain Co.	E. Liverpool	Insulators
American Porcelain Co.	E. Liverpool	Insulators
Colonial Insulator Co.	Akron	Insulators
Davidson Porcelain Co.	E. Liverpool	Insulators

Federal Porcelain Co.	Carey	Insulators
Findlay Elect. Porcelain Co.	Findlay	Insulators
Fishwick Radio Co.	Cincinnati	Indoor antennas
Guarantee Specialty Mfg. Co.	Cleveland	Loop antennas
Hartman Electrical Mfg. Co.	Mansfield	Loop antennas
Interstate Signal Co.	Columbus	Indoor antennas
Mogadore Insulator Co.	Mogadore	Insulators
Scott & Fetzer Co.	Cleveland	Loop antennas
Thomas & Sons Co.	E. Liverpool	Insulators
Toaz Engineering Co.	Cleveland	Loop antennas
Trenle Porcelain Co.	E. Liverpool	Insulators

Miscellaneous Parts

Air-Way Appliance Co.	Toledo	Condensers, Dials, Coils
Auld Co.	Columbus	Dials, Nameplates
Barkelew Electric Mfg. Co.	Middletown	Plugs
Bird Radio Corp.	Cincinnati	Crystals, Coils
Brockway Laboratories Co.	Toledo	Condensers
Carter Mfg. Co.	Cleveland	Crystals, Cpils
Cleveland Instrument Co.	Cleveland	Tube sockets
Cleveland Products Co.	Cleveland	Dials, RF,AF Xfrmrs, sockets
Continental Carbon, Inc.	Cleveland	Resistors
Crescent Mfg. Co.	Toledo	AF transformers
Endley, C.C.	Mansfield	AF transformers
Fett & Kimmel Co.	Bluffton	Variable condensers
Forest City Rubber Co.	Cleveland	Dials, Panels, Binding Posts
Formica Insulation Co.	Cincinnati	Panels
France Mfg. Co.	Cleveland	Rheostats
Franklin Radio Mfg. Co.	Cleveland	Condensers
Goetz, Edward J. Co.	Cincinnati	Condensers
Goodrich, B.F. Rubber Co.	Akron	Panels
Hartman Elect. Mfg. Co.	Mansfield	Var. condensers, ariocouplers
Harvey & Walton Mfg. Co.	Cincinnati	Condensers
International Insulating Corp.	Elyria	Knobs, Dials
Kurz-Kasch Co.	Dayton	Dials
M & M Co.	Cleveland	RF coils
Marshall-Gerken Co.	Toledo	Binding posts
Maxwell Radio Co.	Steubenville	Tube rejuvenators
Mazda Radio Mfg. Co.	Cleveland	All Parts
Modern Electric Co.	Toledo	AF, RF Transformers
Monosmith Bros. Co.	Spencer	Vernier Dials
Mueller Electric Co.	Cleveland	Test clips
Nagel Electric Co.	Toledo	Meters
Newman-Stern Co.	Cleveland	Crystals
O'Connor & Co.	Cleveland	Tube rejuvenators
Packard Electric Co.	Warren	Cables
Radio Television Co.	Cleveland	AF transformers
Read, J.M. Co.	Cleveland	Condensers
Readrite Meter Works	Bluffton	Panel meters
Reliable Parts Mfg. Co.	Cleveland	AF, RF xfrmrs, var. condensers
Roll-O Radio Corp.	Cincinnati	Crystals
Schindler, Chas. Co.	Toledo	Condensers, RF Coils
Sears Mfg. Co.	Cleveland	Coils
Seiss Mfg. Co.	Toledo	Rheostats, Switches
Sharp Spark Plug Co.	Wellington	Tuning coils, Jacks
Standard Transformer Co.	Warren	AF transformers
Sterling Electric Corp.	Cleveland	AF, RF Transformers
Sterling Mfg. Co.	Cleveland	Meters, Condensers
Sun Rubber Co.	Barberton	Panels
Sypher Mfg. Co.	Toledo	Coils
Toaz Engineering Co.	Cleveland	Tube sockets
Walker, Geo. W. Co.	Cleveland	Coils

Radio Batteries and Eliminators

Comet Battery Co.	Cleveland	
Cooper Corp.	Cincinnati	Eliminators
Champion Carbon Mfg. Co.	Cincinnati	
Cincinnati Storage Battery Co.	Cincinnati	
Carbon Products Co.	Lancaster	
Cleveland Engineering Labs.	Cleveland	
Kodel Radio Corp.	Cincinnati	Eliminators
McLean Storage Battery Co.	Cleveland	
Main Radio Batteries, Inc	Cleveland	
Martin, Glenn L. Co.	Cleveland	Eliminators
Radio Rabat Co.	Cleveland	
Radio Television Co.	Cleveland	
Reflex Spark Plug Co.	Cleveland	Eliminators
Silvey Electric Co.	Dayton	
Steiner Battery Co.	Lancaster	
Sterling Mfg. Co.	Cleveland	Eliminators
Twin Dry Cell Battery Co.	Cleveland	
Willard Storage Battery Co.	Cleveland	

Table 3 - Manufacturer's Trade Names

Trade Name	Company	Product
A-C Dayton	A-C Electric Co.	Receivers
Ace	Carbon Products Co.	Batteries
Ace	Precision Equipment Co.	Receivers
Acme	Sears Mfg. Co.	Receivers
Aero B	Martin, Glenn L. Co.	Eliminators
Air Master	WorkRite Mfg. Co.	Receivers
Air Scout	Air Scout Tube Co.	Tubes
Aladdin	Simplex Radio Co.	Speakers
Atlas	RSK Co.	Tubes
Bean	Liberty Metal Products Co.	Speakers
Carco	Carter Mfg. Co.	Receivers, parts
Chum	WorkRite Mfg. Co.	Receivers
Clearodyne	Cleartone Radio Corp.	Receivers
Cleveland	Cleveland Products Co.	Kits
Concert Grande	Concert Radiophone Co.	Receivers
Consomello	Mazda Radio Mfg. Co.	Receivers
Courier	United Reproducers Corp.	Receivers
Crusader	Sunlight Lamp Co.	Tubes
Daycraft	Dayton Fan & Motor Co.	Receivers
Day-Fan	Dayton Fan & Motor Co.	Receivers
Dayola	Dayton Fan & Motor Co.	Receivers
Diamond	United Metal Stamping & Radio Co.	Receivers
Du-All	Twin Dry Cell Battery Co.	Batteries
Dulce-Tone	Teagle Co.	Phono adapter
Effarsee	Fishwick Radio Co.	Antennas
Ensemble	Premier Radio Corp.	Receivers
Equidoron	Doron Bros. Electric Co.	Receivers
F-F	France Mfg. Co.	Rheostats
Favorite	Bartholomew, G.A.	Cabinets
Fearnola	Cussins & Fearn Co.	Receivers, Tubes
Fedco	Federal Porcelain Co.	Insulators
Franklin	Van Horne Co.	Receivers
Gold Star	Kodel Radio Corp.	Receivers
Goldcrest	Cleartone Radio Co.	Receivers
Golden Queen	Art Cabinet Works	Cabinets
Green Seal	Air-Way Electric Appliance Co.	Receivers
IRL	Independent Radio Labs.	Receivers
Klear-Tone	Twin Dry Cell Battery Co.	Batteries
L.D.R.	United Metal Stamping & Radio Co.	Receivers
Logodyne	Kodel Radio Corp.	Receivers
Longoria	Sterling Electric Corp.	Receivers
Majestic	Davis, J.M., Co.	Speakers
MaxEff	Higby-Avery Co.	Receivers
Micadenser	Franklin Radio Mfg. Co.	Condensers
Miraco	Midwest Radio Co.	Receivers, tubes
Moon	Wilson Utensil Co.	Speakers
Musicone	Crosley Radio Corp.	Speakers
Musselman	Van Horne Co.	Tubes
NAA	Newman-Stern Co.	Crystals
Navigator	A.C. Electrical Mfg. Co.	Receivers
Neutro-Grand	WorkRite Mfg. Co.	Receivers
No-Dial	Ohio Stamping & Engineering Co.	Receivers
Ohio	Harvey & Walton Mfg. Co.	Condensers
Par	Par Tube Co.	Tubes
Paraflex	United Metal Stamping & Radio Co.	Receivers
Peerless	United Reproducers Corp.	Speakers
Premier	Premier Radio Corp.	Receivers
Qualitone	Dual Tool Co.	Speakers
Quality	Kodel Radio Corp.	Speakers
Queen	Maple Radio Shop	Receivers
Rabat	Radio Rabat Co.	Batteries
Radio King	WorkRite Mfg. Co.	Receivers
Radjo	Sharp Spark Plug Co.	Tuning coils
Ranger Five	Ainsworth-Gates Radio Co.	Receivers
Re-Nu	Steiner Battery Co.	Batteries
Rectube	Specialty Appliance Co.	Tubes
Rub-Mika	Cooper Corp.	Batteries
Serenader	Sterling Mfg. Co.	Receivers
Silver King	Art Cabinet Works	Cabinets
Simplex	Simplex Radio Co.	Receivers
Storad	Cleveland Engineering Labs.	Batteries
Sunlight	Sunlight Lamp Co.	Tubes
Super-Equidyne	Doron Bros. Electric Co.	Receivers
Super-Flex	Sypher Mfg. Co.	Kits
Superfive	Precel Radio Mfg. Co.	Receivers
Supertone	Cleveland Auto Accessories	Receivers
Super Ultra	Stanley Radio Co.	Receivers
Synchrodyne	Stanley Radio Co.	Receivers
Torodyne	Ainsworth-Gates Radio Co.	Receivers
Torodyne	Sears Mfg. Co.	Receivers
Troubador	Sterling Mfg. Co.	Receivers
Unitrol	Kodel Radio Corp.	Receivers
V-T	Prima Products Corp.	Receivers
Volumax	Scott & Fetzer Co.	Loop antennas

Table 4 - Ohio Broadcasting Stations - 1922-24

Call		kHz	Watts
KDPM	Cleveland (Westinghouse)	1110	250
WAAY	Youngstown (Yahrling-Rayner Piano Co.)	—-	—-
WABH	Sandusky (Lake Shore Tire Co.)	1250	100
WABP	Dover	1130	100
WBAL	Columbus (Superior Radio & Tel. Co.)	—-	—-
WBAV	Columbus (Erner & Hopkins Co.)	770	500
WBAW	Marietta (Marietta College)	1220	250
WBBA	Newark (Newark Radio Labs.)	—-	—-
WCAH	Columbus (Entrekin Electric Co.)	1050	100
WCBB	Greenville (K & K Radio Supply Co.)	1250	100
WDBF	Youngstown (Robert G. Phillips)	1150	50
WDBK	Cleveland (M.F. Broz Furniture Co.)	—-	—-
WDZ	Toledo	—-	—-
WEAO	Columbus (Ohio State University)	833	500
WFBW	Cincinnati (Ainsworth-Gates Radio Co.)	—-	—-
WGAU	Wooster (Radio Mfg. & Service Co.)	—-	—-
WGAX	Washington Court House (Radio Elect. Co.)	—-	—-
WHAG	Cincinnati (University of Cincinnati)	1350	200
WHK	Cleveland (Radiovox Co.)	1050	500
WHU	Toledo (Wm. B. Duck Co.)	—-	—-
WIZ	Cincinnati (Cino Radio Mfg. Co.)	—-	—-
WJAK	Stockdale (White Radio Lab.)	—-	—-
WJAX	Cleveland (Union Trust Co.)	770	500
WJD	Granville	1310	50
WJK	Toledo (Service Radio Equip. Co.)	—-	—-
WLAZ	Warren (Hutton & Jones Elect. Co.)	—-	—-
WLW	Cincinnati (Crosley Mfg. Co.)	710	500
WMAN	Columbus (Broad St. Baptist Church)	—-	—-
WMC	Youngstown (Columbia Radio Co.)	—-	—-
WMH	Cincinnati (Precision Equip. Co.)	—-	—
WNAP	Springfield (Wittenberg College)	1300	100
WOAC	Lima (Maus Radio Co.)	1130	100
WPAL	Columbus (Superior Radio & Tel. Co.)	1050	100
WPG	New Lebanon (Nushawg Poultry Farm)	1280	50
WRAV	Yellow Springs (Antioch College)	833	100
WRK	Hamilton (Doron Bros. Electric Co.)	833	200
WSAI	Cincinnati (U.S. Playing Card Co.)	970	500
WSAA	Marietta (Sprague Elect. Co.)	—-	—-
WSAK	Middleport	1160	70
WSZ	Toledo (Marshall-Gerken Co.)	—-	—-
WTAL	Toledo (Toledo Radio & Elect. Co.)	—-	—-
WTAM	Cleveland (Willard Storage Battery Co.)	770	1000
WWB	Canton (Daily News Printing Co.)	1120	100

Table 5 - Ohio Broadcasting Stations - 1925-28

Call		kHz	Watts
WAAD	Cincinnati	1300	25
WADC	Akron	1260	1000
WAIU	Columbus	1060	5000
WCAH	Columbus	1280	250
WCSO	Springfield	1170	500
WEAO	Columbus	1060	750
WEAR	Cleveland	750	1000
WEBE	Cambridge	1210	10
WFBE	Cincinnati	1220	250
WFJC	Akron	1320	500
WHBC	Canton	1270	10
WHBD	Bellefontaine	1350	100
WHBR	Cincinnati	—-	—-
WHK	Cleveland	1130	500
WIBR	Steubenville	1200	50
WJAY	Cleveland	1320	500
WKBN	Youngstown	1400	50
WKRC	Cincinnati	1220	500
WLBV	Mansfield	1450	50
WLW	Cincinnati	700	500
WMAN	Columbus	1280	50
WMBW	Youngstown	—-	—-
WOAC	Lima	—-	—-
WRK	Hamilton	1460	100
WSAI	Cincinnati	830	5000
WSAZ	Pomeroy	—-	—-
WSMK	Dayton	1010	200
WSPD	Toledo	1250	250
WSRO	Middletown	1270	100
WTAM	Cleveland	750	3500 day

Way, went into radio because they already had much of the required machinery and skills (Hartman made motor controls, and Air-Way made vacuum cleaners). When radio manufacturing became unprofitable, they could discontinue it without affecting their core businesses. Air-Way survived until 1957, and Hartman is still in business today.

Accurate information about many of these companies is difficult to obtain. References (1) through (4) are useful, but dates are uncertain. The fact that different companies of the same name were making radios at the same time is confusing.

There was a Simplex Radio Co. in Philadelphia and one in Sandusky, OH in the 1920s, apparently unrelated. There were two Sterling companies in Cleveland with different addresses and using different trade names. Were they related? The Akradyne Radio Corp. in Cleveland

made one model of radio for one year in 1926. The Sunbeam Radio Sales Corp. of New York had sold a line of 1925 models with the same trade name. To further complicate matters, there was a Sunbeam Radio Co. in Lima, OH. Were they related?

Many radio manufacturers in the 1920s were only one step away from bankruptcy. It may well be that companies with similar names were actually different versions of the same company formed to escape creditors.

Table 1 lists the companies claiming to be manufacturers of receivers or kits. It is quite likely that many of the more obscure companies did not actually manufacture their products, but had them made by others. Cussins & Fearn was a large Columbus hardware distributor. They sold radios and tubes under the "Fearnola" trade name for many years beginning in the mid-1920s. The maker of the early sets is unknown, but the later ones were made by Continental, Warwick and Wells-Gardner.

The nature of companies changed constantly. For years, the George Walker Co. sold superheterodyne parts and kits designed and produced by John Victoreen (5). In 1929, Walker bought the WorkRite Co. Also in 1929, Victoreen announced the formation of a company to make superheterodyne radios (6). He produced a line of 1930 models, but vanished thereafter.

The company names were obtained mainly from References (1) and (4). Model listings by year in References (2) and (3) help to establish the dates during which these companies were in business. Detailed histories of some of these companies are given in (4). There are some companies which claimed to be radio manufacturers in (1), but no listing has been found for them in (2)-(4), so dates cannot be established.

Manufacturers of Accessories, Tubes and Parts

Ohio was the home of nearly 100 makers of tubes, cabinets, accessories, batteries, speakers and radio parts of all kinds (1), (5), (7), (8), (9). Some companies, like Mazda, made and sold individual parts for the home builder and smaller set makers as well as complete receivers. The Kodel Radio Corp. made a complete line of products—receivers, speakers, battery chargers and eliminators and individual parts. Other companies made accessories, such as speakers, for sale with their own sets, but also sold them separately for use with others.

The Wilson Utensil Co. was basically a manufacturer of pots and pans, but their metal-forming technology enabled them to add horn speakers to their product line. The Miller Rubber Co. diversified into producing custom hard-rubber horn bells for other manufacturers, another logical choice. The RCA UZ-1325 horn uses a Miller bell.

Ohio has long had a flourishing glass and ceramics industry owing to abundant sand and clay of high quality. This industry is well represented a the number of companies making insulators for radios and antennas.

There were only two significant tube makers in Ohio, Myers and Van Horne. Elman Myers had worked for deForest, General Electric and Western Electric in the development and manufacture of tubes. He started making his own tubes in California, but was stopped by deForest. He then moved to Canada and continued making tubes. When the deForest patent expired, the Myers Co. moved to Cleveland. There they were sued by RCA and eventually went bankrupt (10).

The Van Horne Tube Co. began in 1925, making non-standard tubes. In 1927 they switched to standard products. They produced tubes under the Van Horne, Air Scout, Thoria, Musselman and Radiotone brands (11). The latter two brands were sold by out-of state organizations.

A variety of trade names were in use by Ohio manufacturers. Some are quite familiar; others are not. These trade names are shown in Table 3. The use of the same trade name (Ace, Torodyne) by apparently unrelated companies is hard to explain. The "Majestic" trade name was used on horn speakers made both by the J.M. Davis Co. in Cleveland and by Grigsby-Grunow-Hinds in Chicago.

Radio Broadcasting Stations

Broadcasting got an early start in Ohio. At the end of March, 1922 there were only four licensed commercial stations in Ohio: WMH, Cincinnati; WHK, Cleveland; WDZ, Toledo and WMC, Youngstown (15). By 1923 there were dozens of stations on the air. Most early stations were owned and operated by companies to promote their businesses. These are listed in Table 4 (12), (13), (15). Table 5 lists the stations operating in 1925-28 (14), (15). Many of the early stations have disappeared and new ones have emerged. Note that some frequency allocations have also changed.

In addition to standard broadcasting, several stations operated experimental short wave stations, as listed in Table 6 (14).

A number of the stations in Tables 4 & 5 are still operating under their original call signs, as

Table 6 - Ohio Short Wave Stations - 1928

Call		MHz	Watts
WEAO (8XJ)	Columbus	5.55	25
WHK (8XF)	Cleveland	4.54	500
WLW (8XAL)	Cincinnati	5.77	25
WLW (8AXL)	Cincinnati	6.00	250

Table 7 - 1920s Stations Operating Today With Original Call Sign

Call	kHz	KW	
WADC	Akron	1350	5
WHBC	Canton	1480	5
WHK	Cleveland	1420	5
WKBN	Youngstown	570	5
WKRC	Cincinnati	550	5
WLW	Cincinnati	700	50
WSAI	Cincinnati	1360	5
WSPD	Toledo	1370	5

shown in Table 7. WLW, started by Powel Crosley as an aid to his radio business, is the only AM station ever allowed to operate regularly (1934-1939) with a power of 500 kW. Today WLW operates at the maximum 50 kW on a clear-channel frequency of 700 kHz.

WEAO is the oldest continuously operating station in Ohio and one of the oldest in the nation. It began in 1920 as experimental station 8XL operated by the Ohio State University. It broadcast weather, university news and other public service material on a limited and irregular basis. In 1921, student operators were hired to do the broadcasts twice daily. In April, 1922 the station was assigned the call letters WEAO and began broadcasting on a regular daily schedule.

In 1933 the call letters were changed to WOSU and the frequency changed to 820 kHz. In 1949, WOSU-FM went on the air at 89.7 MHz, simulcasting with the AM station. Gradually, WOSU-FM became a classical music station and stopped simulcasting in 1980. WOSU-TV went on the air in 1956 on UHF Channel 33.

From the beginning, these were non-commercial, public service stations. WOSU-AM is a National Public Radio member, WOSU-FM is supported by listener and university contributions, and WOSU-TV is a PBS station with viewer, federal and university support.

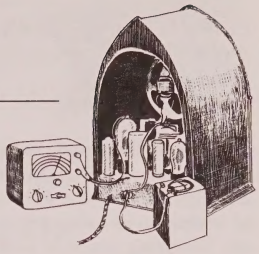
The author has no illusions that this list is complete. He welcomes any additions or corrections.

References

1. *The Radio Trade Directory*, August, 1925 (Reprint).
2. McMahon, M.E., *1921-1932 Radio Collector's Guide*, Antique Electronic Supply, Tempe, AZ, 1981.
3. Grinder, R.E., *Radio Collector's Directory*, Second Edition, Sonoran Publishing Co., Scottsdale, AZ, 1995.
4. Douglas, A., *Radio Manufacturers of the 1920s*, Vols 1-3, Sonoran Publishing Co., Scottsdale, AZ, 1988-91.
5. *Radio News*, Vol. 8, No. 6 (December 1926).
6. *Radio*, Vol. 11, No. 7 (July 1929).
7. *Radio News*, Vol. 6, No. 8 (February, 1925).
8. *Radio News*, Vol. 7, No. 1 (July, 1925).
9. *Radio News*, Vol. 10, No. 5 (November, 1928).
10. Tyne, Gerald, F.J., *Saga of the Vacuum Tube*, Howard W. Sams & Co., Indianapolis, IN, 1977.
11. Cross, Jim, *Old Timer's Bulletin*, Vol. 35, No. 2 (May 1994).
12. Anderson, J.E., Mills, A.C.C. and Lewis, E.H., *222 Radio Circuit Designs*, N.W. Henley, New York, 1923.
13. *Instruction Book 86963D*, Radio Corp. of America, New York, 1924).
14. *Radio News*, Vol. 10, No. 5 (November, 1928).
15. Freeman, G.A., *AWA Review*, Vol. 13, p. 124 (2000).
16. *Radio Trade Catalog*, McGraw-Hill, New York, 1926.

EQUIPMENT RESTORATION

EDITED BY **KEN OWENS**, 478 SYCAMORE DR., CIRCLEVILLE, OH 43113
radiowd11@yahoo.com
PLEASE SEND CORRESPONDENCE DIRECTLY TO THE ABOVE ADDRESS,
INCLUDING SASE FOR REPLY.



More Gems from *The OTB* (and Other Publications)

Don't forget that answers to your questions are available at the e-mail address above.

Please note the change of E-mail address. Spam and junk mail have become intolerable. I think Hotmail has sold my address to everyone on the planet. Yahoo doesn't seem to have this problem.

♦ ♦ ♦ ♦

Alton DuBois (Queensbury, NY) enjoys reading old radio books. He comments on the following text in *Modern Radio Servicing* by Alfred Ghirardi (1935). A portion of the schematic in question is shown here.

The diagram of a commercial RF signal generator is shown on page 423. The text states that "An unmodulated signal may be obtained by short-circuiting the a-f pin jacks." If you look closely, you'll see that shorting the a-f jacks has the effect of placing the filament voltage across the transformer winding. This can't be good for either the batteries or the transformer.

Alton points out that even "authoritative" texts can contain errors. Certainly someone made a mistake here.

♦ ♦ ♦ ♦

The magazine *Scientific American* has a column each month entitled "50, 100 & 150 Years Ago," in which they reprint items from old issues. Here is an interesting item from the January, 2002 column. It originally appeared in January, 1952.

An Unhappy Reader

Sirs, the article in August 1951, by Louis N. Ridenour, properly entitled 'A Revolution in Electronics' is most interesting. The article, however, conveys an entirely erroneous impression: that the three-electrode tube amplifier has virtually come to the end of its career. Dr. Ridenour neglected to mention the frequency limitations of the transistor. Under such limitations, it cannot begin to compete with the three-electrode tube, or audion, as I first styled it. The general application of the transistor in radio and television receivers is far in the future. —Lee deForest

Ridenour Replies

Sirs, I am very pleased to have the comments of the man who made possible the present age of electronics, even though I must take mild issue with some of them. The time at which consumer radio and television can use transistors may indeed be some years off, as Mr. deForest says. However, this delay is likely to be due to the inability of rising transistor production to keep up with vast and growing military demands. The principal limitations of complex electronic apparatus are traceable to the fundamental shortcomings of the vacuum tube, which nearly half a century of development has alleviated, but not cured. —Louis N. Ridenour

♦ ♦ ♦ ♦

Continuing our exploration of back issues of *The OTB*, the following article from V.24, #1 (June 1983) seemed especially appropriate in view of an experience I had with a Story & Clark grandfather clock chassis. It was an unusual double-decker affair consisting of the RF section on one chassis and the AF and power section on another. The two units were stacked, and mounted with angle brackets on each corner. I confirmed that the power transformer, speaker field and output transformer were good. After replacing all capacitors and a few out-of-tolerance resistors, the set was carefully brought up to full line voltage. RF alignment was done, voltages measured and found correct, and the set was left to play. I play all sets for 3-4 hours before considering them restored. After about 30 min, the power transformer went up in smoke. Replacing it was a major job. Following the procedure below (condensed from the original) might have saved me some grief.

Haste Makes Waste or What Is That Awful Smell?

John J. Nagle, K4KJ
From *The OTB* Volume 24, No. 1 (June, 1983)

There are three principal villains that kill old receivers: deteriorated insulation, moisture and high line voltage. Remember that receivers of interest to us today are as much as 50 years old. Insulating materials were not as good in the 1930s as they are today, so some deterioration is inevitable. Couple this with the fact that your receiver was probably stored in someone's attic or basement for half its life and exposed to periods of high humidity. As this moisture worked into the insulation, it has further weakened it.

Line voltages have increased from 110-115V in the 1930s to 120-125V today. The weakened insulation is stressed by higher voltages than it was originally designed to withstand. The result can be trouble if you are not careful.

The usual method of removing moisture from a power transformer is to bake it in an oven. This requires that the transformer be dismounted from the chassis. Unsoldering all those connections is hard work and invites additional trouble. There is another way to accomplish the same thing: bake the transformer in place.

To do this, remove all tubes and put solid short circuits on all secondary windings. The high voltage and rectifier filament windings can be shorted at the rectifier socket. The other filament windings should be shorted together as close to the transformer as possible. Next place a light bulb whose wattage rating is approximately that of the set in series with the primary and apply line voltage. Make sure the line cord and primary wiring are in good condition before you start.

The object is to cause rated current to flow in the primary without developing high voltages in the secondary which might break down the insulation weakened by moisture. The IR losses in the primary will heat the transformer from the inside out. After a few hours, the transformer will be warm to touch. Now you can replace the light bulb with one having a wattage rating about twice the rated wattage of the receiver. Allow the transformer to become quite warm, but not uncomfortably hot.

Then disconnect the set from the line, remove all shorts, and replace the capacitors and other bad components. When bringing the set on line for test, it is advisable to use a Variac and raise the line voltage in 10V steps until the rated voltage is reached. Your set should be playing now.

Restoring Old Equipment

From *The OTB* Volume 14, No. 3 (December, 1973)

Restorers are often faced with the need to patch holes in Bakelite panels. A query brought the following suggestions:

1. Doug Bullock (Augusta, GA) uses an industrial black epoxy paste called Compound 201 from Epoxylite Corp., 16 Breckenride St., Buffalo, NY 14213. With the addition of Catalyst 301, it sets up in 24 hr to a very hard substance. He clamps a piece of glass over the front of the hole and fills from the back. The glass gives a polished finish and also allows any air bubbles to be seen and removed.

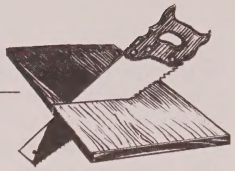
2. Alan Douglas (Pocasset, MA) uses "Twin-Weld" epoxy which he colors black with carbon dust obtained by sandpapering a charcoal briquette. After the hole is filled and the epoxy is set, he sands down the patch with 220 grit carbide paper and water. The patch is further smoothed with 400 and 600 grit carbide paper used wet. Final polish is with rottenstone or "Vista" car wax.

3. Al Woody, W7WQ (Winslow, WA) uses black sealing wax. Other colors are available from woodworking stores for panels other than black. The end of the wax stick is heated with a small flame and allowed to drip into the hole until it is filled slightly above the panel surface. Trim the wax flush with the panel using a razor blade. Final polish is made by bringing a small flame or a hot soldering iron near the patch until its surface flows. When cool, it will have a polished appearance.

3. Orel Orvis, W2MAB (Deposit, NY) taps the hole and inserts a black nylon screw from the rear. Tap and screw size is determined by the size of the hole to be patched. For a tight fit, he uses a starter tap and does not tap a full thread. To get the correct length and finish the end of the screw, he taps a piece of scrap panel of the same thickness as the panel to be repaired, cuts the screw to the approximate length and inserts it into the scrap piece. The protruding end is then sanded down and polished. When screwed into the panel, no further polishing is needed.

Your editor has used a combination of 1 (the glass backing) and 3 (sealing wax) with excellent results. Patches are all but invisible. Note also that nearly 30 years have passed since these tips were published. Products may no longer be available or the companies may no longer exist.—dko

EDITED BY **RICHARD A. PARKS**, 2620 LAKE RIDGE CT., OAKTON, VA 22124
PLEASE INCLUDE SASE FOR REPLY.



Bring Historical Circuits to Life On Your Workbench!

Super-Regenerative Detectors, Part III

I haven't received so much mail since the fuss about which side of a triode filament should be grounded! Andrew Mooradian of Winchester, MA sent a circuit for a superregen from the pages of Popular Electronics for August, 1961. This one has a cascode (grounded-grid) RF amplifier ahead of the SR detector to help isolate the antenna from the oscillating detector. Not only that, it uses a Compactron triple triode. When he gets it built, maybe he'll write a guest column.

Last time, we looked at a superregen circuit recommended by "Cathode Ray" (M.G. Scroggie) (1). My version of the circuit is shown as Figure 1. According to Mr. Scroggie, the six-grid tube operates like this:

The first two grids, normally used for the local oscillator in a superhet, are employed to generate the quench frequency; and the RF goes in, also quite normally, at the control grid...it works at VHF because the effective cathode is somewhere between the visible cathode and the control grid, and stray capacitances cause the circuit to oscillate in the Colpitts manner.

Figure 2 is a simplified "equivalent circuit" showing how the Colpitts configuration would be realized.

Now if there's one thing that breadboarding gives you, it's stray capacitances. But where do you find a six-grid tube with connections to the right three grids? I spent some time with my junk box and my tube manual, and came up with a 7A8 loctal, probably from an old Philco car radio. I dug into my supply of copperclad board and made an open-plan chassis and front panel. Looking closely at the parts values called for in Figure 1, the values for the coils at the first and second grids play a part in setting the quench frequency. I have plenty of WWII surplus coils in one of my junk drawers, and the ones that seemed to give me a quench at about 18.5 KHz are labeled "60 mH" and "10mH". You may be able to spot these coils in the rear view of my completed receiver (see Figure 3).

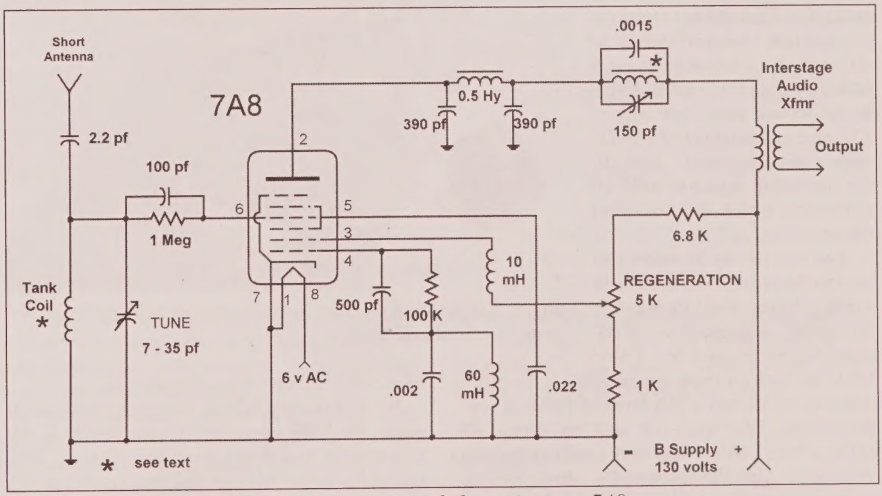


Fig. 1. Author's version of Scroggie's recommended circuit uses a 7A8.

The pi-section filter was a little tougher. I have a computer program I wrote years ago that selects pi-section part values, but it runs in DOS and has gone to sleep inside my Windows computer. I found a potted choke that was labeled "500 mHy" and used that with a pair of 390 pf capacitors that came close to those called for in the original circuit.

In this circuit, you control regeneration by adjusting the screen voltage; I used a 5K wirewound pot that gives a range from 10 to 60 volts at the third and fifth grids. The detected output passes through a filter to an interstage transformer to an outboard audio amplifier. I soldered a 3:1 transformer onto the chassis plate, and some terminal strips for making connections to the receiver. Power came from bench supplies. I set B plus to about 130 volts and fired it up.

This is some hot receiver. I wound an RF tank coil that put the tuning range into the 31 meter SW band and found lots of signals. Regeneration was very smooth and did not affect tuning at all. But there was too much of the quench frequency getting out to my bench audio amplifier. The pi-section filter did not attenuate my quench "carrier" much at all—only by a factor of 6—so I added a parallel trap made from a toroid wound with eight feet of #28 wire and tunable to 18.5 kHz with a mica trimmer. This cut the unwanted signal to only 20 millivolts, which did not upset the amplifier.

You can see my 31 meter coil next to the breadboard in the rear view photo. Following Mr Scroggie's suggested move toward higher frequencies, I next made the tank coil you see installed in the set. It consists of one and a half turns of 1/4 inch copper tubing. That took my tank up around 40 MHz, where I didn't hear very much in the way of activity. Also, the regeneration adjustment became very touchy, and there was less and less audio output. I attribute this problem to the 7A8 tube and to all my stray capacitances.

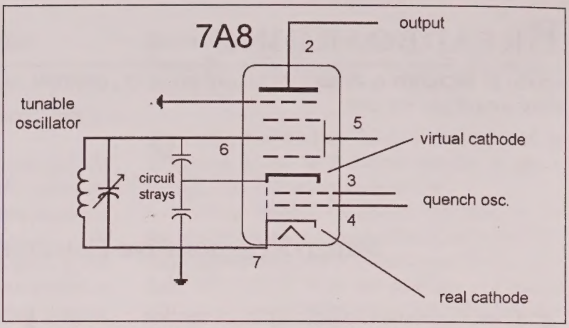


Fig. 2. Functional version of author's circuit.

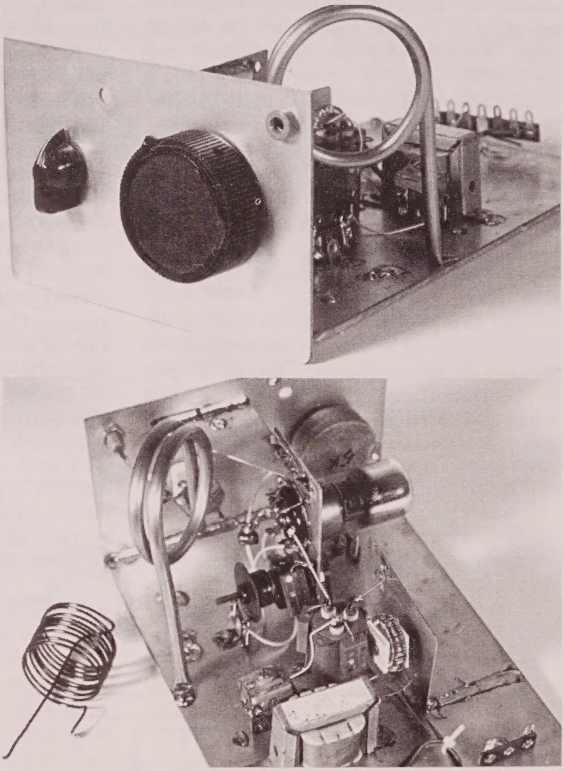


Fig. 3. The finished receiver. In back view, 40MHz coil is shown installed; 31M coil is loose at left.

It's best to keep to high-frequency tubes when going for VHF operation. If you decide to try this circuit and don't have the "F.C.4" tube called for in the original diagram, see if a 6BE6 works better after all. It might actually get you almost to the FM band! *(continued next page)*

Mics and Men

EDITED BY **GEORGE A. FREEMAN**, 102 E. MAIN ST., MADISON, IN 47250-3411.
PHONE (812) 265-6878. E-MAIL RALOGEUM@AOL.COM. *PLEASE INCLUDE SASE FOR REPLY.*

The Mic: RCA 77-A
The Woman: Helen Field Fischer

I discovered this picture on a five-day visit to the Greater Shenandoah (Iowa) Historical Society last year. You're looking at what RCA dubbed "...an entirely new type of sound pick-up device"—the first 77-A ribbon microphone. It probably was one of the few manufactured in 1936. A unidirectional unit, the 77-A offered frequency response from 60 cycles to 10,000 cycles and a pick-up angle of 150 degrees. Price, $190.00. *Radio World* carried the RCA announcement of the new ribbon technology as early as September, 1932.

Helen Field Fischer at the RCA 77-A ribbon mic.

Helen Field Fischer was the oldest of five sisters and two brothers in a family living in Shenandoah, IA in the late 19th century. The best-known of the siblings, Henry Field, founded The Henry Field Seed and Nursery Company. With the help of exposure supplied by pioneer radio station, KFNF (founded in February, 1924), The Henry Field company became a multi-million dollar enterprise and the largest seed and nursery operation in the world.

The picture was taken at a reunion at the station during the family's last days there. You can see a portion of the third station call letter, and all of the last one, out in the hallway.

Helen Field Fischer performed on the air as the "KFNF Flower Lady," commenting on shrubs, flower gardening and landscaping. She served on the board of directors of the Henry Field Seed and Nursery Company at its peak, beginning in 1927. Helen also recruited her sisters to contribute programming in their own areas of expertise.

I hope to develop a good deal more information on three seed companies that pioneered in the effective commercial use of radio back in the earliest days of the medium. That story is to appear in *The AWA Review* Volume 14, (2002 edition).

References

pp 3, 4, 6, Operating instructions for Uni-Directional Microphone Type 77-A-4040), RCA Publication

p. 393, *The History and Evolution of the Microphone* by B. Paquette, Milwaukee, WI

BREADBOARDING, *continued from previous page*

I'm still waiting for volunteer breadboarders to help with this column. In the meantime we'll start looking at oscilloscopes. Start looking around for a 902 scope tube.

Finally, my thanks go out to everyone who recognized the "mystery receiver" in the last issue as a Steinite regenerative from about 1923 (see also "Letters to the Editor"). That name on the capacitors was a giveaway. Seems that Steinite used red checkers as well as black ones in the center of the spiderweb coil. Harvey Staines of Battle Creek, MI sent me several pictures of his prize-winning Steinite crystal receiver. It looks like mine but without the tube.

References

(1) Second Thoughts on Radio Theory, M.G. Scroggie ("Cathode Ray"); Iliffe and Sons, Ltd; London, 1955, pp 45 - 46.

JOSEPH G. JACKSON, M.D.

ASBESTOS EXPOSURE AND RADIO COLLECTING

Can radio collecting be hazardous to your health? Most collectors are aware of the obvious potential dangers. Other than the inevitable damage to your wallet, there are high voltages to contend with as well as sharp metal edges and fragile glass tubes. There has been some concern about possible radiation exposure from the radio itself and there may be side effects from the inhalation of lead vapor from solder and fumes from improper handling of solvents and refinishing products.

However, one potential menace that many collectors might *not* be aware of is asbestos exposure. I have encountered many compact sets from the 30s and 40s with a sheet of asbestos attached under the cabinet top. Apparently this was employed to protect the wood and finish from the excessive heat generated by tubes and other components. More often than not, the asbestos is now deteriorating and crumbling. This is its most dangerous state.

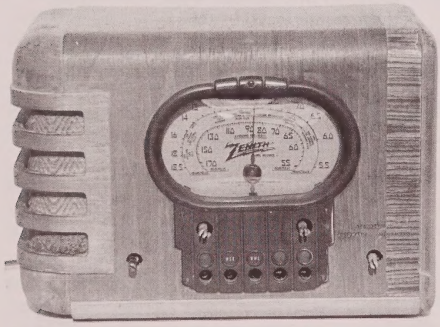
Asbestos is a physical paradox, displaying both crystalline and fibrous properties. Being waterproof, resistant to decay and chemical reaction, and an outstanding insulator of heat and sound, it has many desirable properties for use in manufacturing. Some of these very properties, however, make it potentially harmful.

The small fibers are easily aerosolized and inhaled. Once inhaled, they are not easily cleared by the respiratory system and can penetrate deep into the lung and into its outer lining, the pleura. If the exposed person is also a smoker, the potential for developing lung cancer is increased nearly 10 fold.

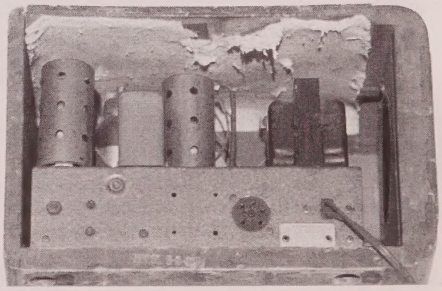
The risk of asbestos-induced disease is related to the number of fibers inhaled and the length of exposure can be brief, even less than a month, if the aerosolized fiber density is high. The onset of symptoms can be very remote with a lag time of up to 30 or 40 years following the first exposure. Mesothelioma, a malignancy of the pleura often related to asbestos exposure, slowly encases the lung and often results in a prolonged and painful demise from asphyxiation.

Avoidance of this material is the best prevention for asbestos-related disease. It would be advisable to stay away from sets afflicted with deteriorating asbestos. Any handling of such radios should be done with extreme care and with proper protective clothing, including gloves and an approved respirator. Refrain from any procedure that might aerosolize the fibers such as dusting with a blow gun. If you find an asbestos-tainted set that you "can't live without," your best bet is to contact a specialist in asbestos removal.

Special thanks to Mr. Odell Williams of TV Central, Macon, GA for providing the radio used for illustration.



This innocent-looking Zenith 5-S-319 looks like a great restoration project, but it also holds a potentially harmful secret.

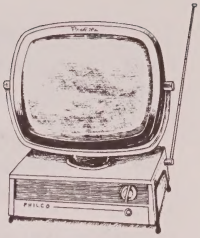


Turning the radio around reveals a badly decomposing sheet of asbestos attached under the top of the cabinet.

AUTHOR'S ADDRESS: 6331 OLD FORSYTH RD., MACON, GA 31210

TELEVISION

EDITED BY **RICHARD BREWSTER**, 145 LITTLE PECONIC BAY ROAD, CUTCHOGUE, NY 11935 *PLEASE INCLUDE SASE FOR REPLY.*



The Early Television Museum

By Steve McVoy

Well, the USA now has a TV museum to rival the MZTV Museum in Toronto! Steve McVoy has put it together in an amazingly short time, and developed a very impressive collection that will attract world-wide interest. Be sure to put it on your list of electronic "must see" attractions. But now I'm going to turn the column over to Steve himself and let him tell the story in his own words.—RB

In November of 2001 the first museum in the United States dedicated entirely to early television equipment opened in Columbus, Ohio. It is operated by the Early Television Foundation, a non-profit organization dedicated to the restoration and preservation of receivers and camera equipment from the 1920s through the 1950s. Our collection includes mechanical sets from 1928-32, prewar British and American electronic sets, early postwar British, American, Dutch and French sets, and early color receivers. In addition, we have a small but growing collection of early postwar camera equipment.

History of the Museum

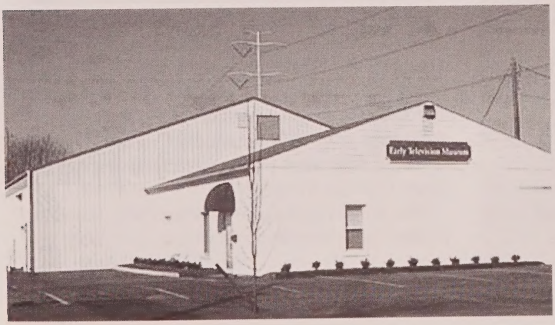
In 1998 I sold my cable television business and, wanting to try something new, decided to collect early television receivers. As a teenager I had worked in a television repair shop, and often worked on early postwar sets such as the RCA 630. I began searching Ebay for sets, and within a few days a RCA TRK-12 prewar set came up. At that time I knew very little about the history of television, and assumed that the first commercial sets were made after World War Two.

The TRK-12 was in pieces. In fact, there were two partial badly damaged cabinets. The CRT was missing, as was the radio dial frame. In the process of bidding on the set, I was e-mailed by a number of U.S. television collectors. As time went on, I got to know them, and slowly learned something about prewar technology and history.

I located a company that does historically accurate cabinet restoration, and they began the process of making one good cabinet out of the pieces I had. I began the electronic restoration, and discovered that the technology was not too different from what I remembered of the early postwar sets I had repaired as a teenager. I began a search for the missing parts, and finally found a CRT (from another collector) and the dial frame (from a RCA radio of the same era). The set now sits in the lobby of the museum.

As I became more familiar with the history of television, I learned of the development of mechanical TV in the United States and in Britain, and of the BBC's broadcasting of electronic television three years before the TRK-12 was introduced. I purchased an RGD 382-RG in England. This set was my introduction to British electronic receivers. It was also missing a number of parts, but the cabinet was in better condition than that of the TRK-12.

In the process of restoring the RGD, I had to find a way to supply a 405-line signal for it. Collectors I met in England supplied me with a VCR, which could play back 405 line tapes,



The Early Television Museum in Columbus, OH.

and I modified an American modulator to supply the RF. The RGD is now complete, and is prominently displayed in the museum's Prewar British room.

I acquired a number of early postwar sets on Ebay, from local auctions, and from radio swap meets. By the year 2000 I had almost 100 sets, and was running out of places to put them. While looking for sets to purchase I visited many of the collectors in the U.S., and, though they were very cooperative in showing me their collection, their sets were generally hidden away in their basements or attics. The major science museums, such as the Smithsonian Institution and the Henry Ford Museum, have a few early television sets on display, but nowhere could the general public see a comprehensive collection of receivers.

I started formulating plans for a museum, and began searching for a suitable building. After considering a number of sites, I decided on an 11,000 square foot warehouse building in a suburb of Columbus. After getting the required governmental approval, renovation of a 2,000 square foot section of the building began in the summer of 2001. In late November the museum opened to the public.

The Collection

We presently have several mechanical sets, including a Baird Televisor, Jenkins Model 100, Hollis Baird C-5, RCA 60 line, and two sets made in 1929 by a Columbus resident and his father. The Baird and RCA are working, with the video supplied by a personal computer which converts the American 525 line video to 30 and 60 line. We also have a working 60 line flying spot scanner camera, using a photocell cabinet originally used by RCA in their 1932 field trials in New York. Visitors can watch their friends on the RCA receiver.

Our restored RCA TRK-12.

Our British prewar collection includes Cossor models 54 and 137T (the 137T was made in 1936, making it the earliest electronic set in our collection); HMV models 904, 905, 907 and 1800; Marconi 705; Pye 817; Ekco TA-201; Baird T18C; and the RGD 382-RG. The Cossor, Pye, Ekco and RGD are in working condition.

Our American prewar sets include the four RCA sets introduced at the 1939 World's Fair: the TT-5 vision-only set and the TRK-5, 9, and 12 TV/Radio receivers. We also have the Westinghouse WRT-700 and 703, made by RCA and electrically identical to the TT-5 and TRK-12. In addition, we have four of the Andrea sets made in 1939: the 1-F-5 table top 5 inch model; the KTE-5 kit version of the same set; the 2-F-5 console model; and the 8-F-12 TV/Radio/Phonograph.

Other American prewar sets include two Dumont models, a 180 from 1938 (the earliest production set in the U.S), and a 183. There is a striking resemblance between these sets and the Cossor 137T, with similar CRTs and sweep circuits. Apparently Allen Dumont visited England in 1937, brought back a Cossor, and copied the design without any licensing agreement.

We have two General Electric sets, a HM-171 5-inch vision-only model and a HM-225 9 inch. Another kit set in our collection is the Meissner 10-1153. Finally, we have a prototype Bell and Howell projection set made around 1944. It uses a 5 inch developmental CRT.

At present, the TT-5, TRK-5, TRK-12, 1-F-5, 2-F-5, HM-171, HM-225, and the Bell and Howell prototype are in working condition.

Our postwar collection includes about 50 sets from the U.S, Britain, France and Holland. We have a number of rare late 40s sets, including the Temple TV-1176, a 7 inch set with built-in magnifier; the Telejuke, a 15 inch Emerson TV set and Seeburg 78 rpm jukebox in a glass cabinet; a Telecon projection set; and a Crosley "Swing a View," with a ten-inch picture tube that can be rotated toward the viewer.

Our early color collection includes the first production color set in the U.S., the Westing-

(continued on page 46)

EDWARD "EDDY" PETER SWYNAR, VE3CUI - VE3XZ

A 1929 Amateur Radio Station for the New Millenium

Part 3 —A Serious Regenerative Receiver

Introduction

What 1929 replica Amateur Radio station would be considered complete without a regenerative receiver? Many Hams of this golden era had at least a nodding acquaintance with the superheterodyne but, judging by the articles in period *QSTs* and *Handbooks*, superhets were considered to be above average in complexity. With hams setting new distance records on an almost daily basis using Edwin Armstrong's principle of 1912, why would anyone tamper with success?

Why, indeed! Here was I, some 73 years after the fact, surrounded by Yaesus, Icoms, Hammarlunds, Hallicrafters and the like, asking myself the same question. Just what was it really like operating a regenerative receiver? The closest I ever personally came to anything akin to regeneration (by design, anyway!) was a Heathkit Q-multiplier and a homebrew pre-selector built from the 1962 *Handbook*. How useful would a "regen" be in the crowded bands of the new millenium? Could such a receiver be regularly pressed into even casual use to-day? Would time be well spent to attempt to homebrew one of my own?

Answers to these questions were long in coming, but most interesting ... and the bottom line? YES—it was well worth the effort to build one.

The Circuit

Whatever form my regenerative receiver would take, one thing was certain: the tubes (and as much of the other hardware as possible, electronic and otherwise) would have to have been readily available for amateur use in 1929. The general lay-out/style/"feel" of the assembled rig would also have to conform to 1929 practice. After extensive research, an excellent foundation for such a receiver was located in the April 1930 issue of *QST* ("The High-Frequency A.C. Receiver at W8AYO," by D.C. McFarlin, pp. 23-26). This classic 4-tube set-up: untuned '24A r.f. amplifier, '24A regenerative detector, '27 a.f. driver, '45 final a.f. amplifier—-would be the model I would refine for use in my own station.

Today's crowded ham bands call for the incorporation of a continuously adjustable tuned stage ahead of any r.f. amplifier. Few period designs used any stage of r.f. amplification at all; most of those that did (like W8AYO's rig) employed broad, untuned front ends with a simple r.f. choke in the grid circuit to ground. Can you imagine the QRM that would be experienced with such a set-up to-day? Reading the vintage articles, one finds that such untuned r.f. amplifier stages were used primarily for minimizing radiation from the sets, rather than enhancing their ability to receive weak signals.

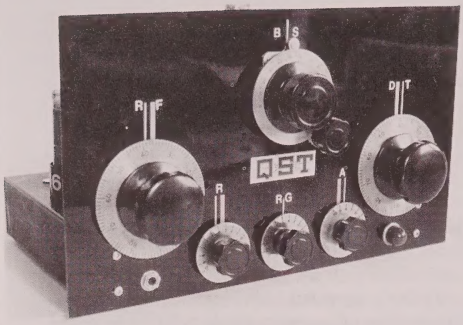
In keeping with tradition, I opted for a simple plug-in coil method of band switching. True, this meant the construction of an additional coil assembly to accommodate the r.f. amplifier, but the benefits would outweigh any inconvenience. Besides, I had a bunch of 4-pin 811A tube bases that needed to be put to work—-and these make excellent foundations for coils, as well as actual coil forms.

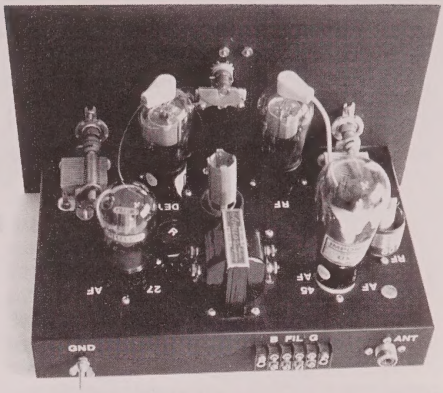
The original *QST* article employed the "throttle condenser" (C4 on my schematic) method of feedback control. This was considered by many to be superior to all other arrangements. But for an extra measure of control and flexibility I also installed a variable resistor in the screen circuit of the detector. This was inspired by a period *"Hints and Kinks"* piece (see Bibliography), and the fact that McFarlin considered the value of detector screen voltage—-between 20 and 25 Vdc—to be critical to proper detector operation.

A variable attenuator (R1) directly in the antenna lead facilitates control of the set's overall sensitivity, in addition to its ability to oscillate (*QST*, September 1992, pp. 35-39). The inclusion of this component was one of those afterthought, "nice-to-have" concepts, which quickly evolved into a "how-did-I-ever-get-along-without-this-before" item. More on this later.

The 245 final audio amplifier has a modern output transformer in the plate circuit that can feed either a low-impedance loudspeaker or a

3773 CONCESSION ROAD 3, R.R. #8, NEWCASTLE, ONTARIO L1B 1L9, CANADA





Left: Front panel of the completed regen. Bandspread control is at top center. Large knobs below it are r.f. (left) and detector tuning controls. Smaller knobs control (from left) r.f. gain, throttle capacitor, audio gain. Right: Just behind the front panel are the r.f. (right) and detector stages, using type 24-A tubes. In the foreground are the type 27 audio driver and type 45 final amplifier.

pair of hi-fi headphones. Its modern looks banished it to the netherworld beneath the chassis. This anachronism was introduced for the sake of safety.

I recalled Fred Hammond (VE3HC), on the occasion of an A.W.A. off-site meeting at his personal museum, explaining to me how a good friend and prominent early ham had instantly joined the ranks of the Silent Keys. It happened when the d.c. blocking capacitor in the headphone lead from the a.f. amplifier plate of his receiver shorted out. Historically correct or not, the output transformer stays put!

Construction

The receiver is built on an aluminum chassis 8" (depth) × 12" (width) x 2" (height) in size. No special shield partitions, etc. were deemed necessary beyond the 13-1/2" × 8" aluminum front panel. The latter was included to eliminate any hand capacitance effects. The component layout was slowly and deliberately arrived at with an eye towards the visual appeal of the finished product. I believe the right balance was struck between form and function.

Looking down on the receiver, it will be noted that the tubes and associated circuitry are located so that each stage effectively "sees" the previous one. Such a logical layout not only helps in simplifying the orientation of tube sockets and components, but also minimizes stray coupling between stages. The "circular" arrangement of the circuitry does place the r.f. amplifier coil in close proximity to the final AF amplifier tube, but there is little chance of interaction here.

The use of vernier drives is strongly recommended for both the r.f. amplifier and detector tuning capacitors, and is absolutely critical on the throttle capacitor (you are striving, after all, for ultra-smooth control of feedback at the detector). I had the very good fortune, while hamfesting, of finding a handful of N.O.S. Jackson Brothers 6:1 reduction drives. These were pressed into service for the former two applications; the junque box yielded a throttle capacitor which had a vernier already incorporated within its shaft assembly.

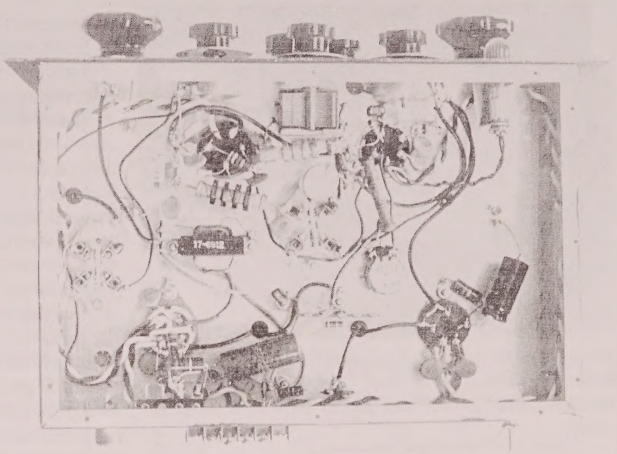
The outer two large, metal-scaled controls seen in the photograph are, in fact, ordinary RCA knobs converted into vernier controls. To do this, I simply removed the dial plate from behind each knob (attached by two small screws), and then soldered a pair of trimmed lugs to the backside of each dial, being careful to ensure that the hole in each lug would align properly with existing threaded holes in the front of each vernier drive. The dial plates were then attached to the drives via screws run through the lugs. And voila! A vintage-looking, very functional pair of dial drive assemblies to help peak signals on my "new/old" regenerative receiver.

I had never before utilized tubes with a top cap. Remembering warnings I'd heard about the ill effects associated with overly-long grid leads, I utilized small-diameter shielded cable for the cap connection on the detector tube, being careful to ground the braid beneath the chassis. To all but the most critical eye, this lead gives the appearance of run-of-the-mill hook-up wire.

A small air variable capacitor was placed in parallel with the detector tuning capacitor to obtain bandspread (very useful when cruising the

relatively narrow ham bands). A vintage General Radio friction reduction drive controls this component. Because I didn't expect it to be used frequently, the screen voltage control mentioned earlier was placed atop the chassis rather than on the panel.

Don't be intimidated by the inclusion of the vintage 3-1/2:1 ratio "Apollo"-brand inter-stage audio transformer. New or vintage devices similar to this continue to be readily available commercially (see "Transformer Sources"), or under flea-market tables. Although I personally have never tried it, I'm sure that a good, reliable Stancor A53-C (or clone thereof) would serve admirably in this application. In fact, the center tap feature of this transformer would likely permit the use of a booming push-pull 245 final AF amplifier to satisfy the latent audiophile in you. For a single-ended stage, one could simply use just half of the secondary winding, with the second half shorted and saved as a "spare," or for possible future consideration.



Thanks to careful arrangement of components, wiring is point-to-point and lead length is minimized. The modern output transformer is the unit with the white part number at left center, under the r.f. choke.

To enhance that "1929 period look," the chassis and the rear of the front panel were finished in flat black enamel paint. As a deliberate contrast to this, the front panel was painted with a high gloss black finish. Vinyl peel-and-stick letters identify the different controls, and silver accent stripes (available from most any auto trim shop) render just a hint of an "art deco" look to the face of the receiver. The circa-1929 *QST* logo attached to the center of the front panel was a fanciful last minute add-on in deference to the source of inspiration that started the entire process.

The Coils

Without a doubt, the construction of the coils for any r.f. project is most vexing to the "newbie" homebrewer. But this needn't be the case if you adhere to some ground rules. Here are some helpful tips from C.F. Rockey's book (see "Bibliography").

(1) The primary and secondary windings of each coil must be wound in the same direction.

(2) The spacing between the primary and secondary winding of each coil (i.e. each respective antenna link and tickler coil, to its associated main tuning coil) should be no more than 3/8".

(3) No matter the actual inductance of each main coil, if it has 10 or more turns, the antenna link/tickler coil should have 1/3 of these turns.

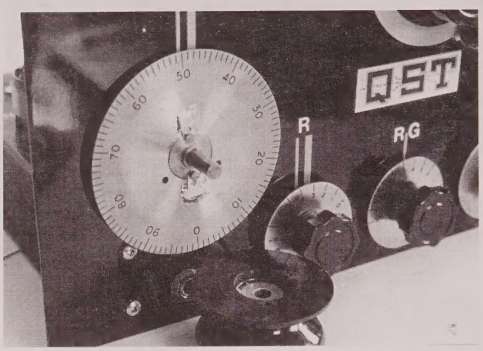
(4) If the main coil consists of 5 to 9 turns, the antenna link/tickler coil should have half as many turns.

(5) If the main coil has less than 5 turns, the antenna link/tickler coil should have the same amount of turns as the main coil.

It matters little whether the coils are wound on the same form, or share a common piece of commercial coil stock, or if a smaller diameter coil is placed within a larger one. As may be seen in the photographs of my own coils, I've tried all manner of inductors, and combinations of same. They all work.

You may use Barker & Williamson coil stock, as I have on some, or simply "...roll your own" (literally), much as was done with my 160-meter r.f. coil in the classic "...enameled-wire-wound-on-a-pill-bottle" style. Similarly, a tube base itself makes an excellent coil form unto itself, as is evidenced in the 80-meter r.f. coil. The rather fanciful 160-meter detector coil was a "rush" effort to see if two pieces of B.&W. coil stock "series-connected" (glued together at the ends is perhaps more like it!) would work on that band...and it does, too, very nicely.

Before actually winding coils or cutting stock,



For r.f. and detector tuning controls, each scale was removed from back of its knob and fastened to front of vernier drive. Knobs and scales now turn independently.

you must first decide on the desired tuning range of your coil set. Figure on the inductance of your main coil to resonate with your variable capacitors—both r.f. and detector—set mid-way. This is where an old A.R.R.L. L/C/F slide-rule calculator is invaluable, although you may have a computer program to do the calculation. The tables and formulas found in the older *Handbooks* will also help in determining coil diameters and turns.

The coils you finally end up with will depend on the contents of your junk box and other resources. Suffice it to say that this aspect of the receiver construction is a good one for the application of your own personal ingenuity. Rest assured, a hand-wound coil of enameled wire will work as well as one made of commercial spaced wire coil stock.

Operation

Assuming your wiring is correct, it's time to see what this beast is all about! I run mine off an outboard ac power supply. You can use anything capable of providing some 250-300 Vdc for the plates and 2.5 Vac at 6.75 amperes for the filaments. For the initial "getting-to-know-you" stage, I'd suggest using a reasonably well calibrated tone-modulated r.f. signal generator.

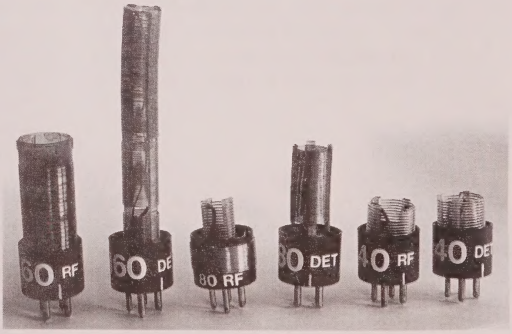
First, pre-set the r.f. attenuator control, the throttle capacitor, and the r.f. amplifier and detector capacitors to a midway position. Adjust the variable screen dropping resistor on the detector for 22 volts and set the AF volume control to a comfortable level. Then attach the output of your signal generator to the antenna terminal.

The next steps are critical, but with repetition you will eventually feel comfortable with them (and with your original decision to undertake the construction of your creation). Remember, practice is perfect—don't even try to hook-up an antenna to the receiver just yet. It is important that you not become discouraged or daunted in any way. Never lose sight of the fact that this is not the traditional superheterodyne receiver you grew up with. Comparisons between the two just wouldn't be fair at this stage of the game.

Switch on the audio tone modulator of your r.f. generator and then s-l-o-w-l-y sweep its output frequency within the anticipated tuning range of the receiver. If you've wired everything correctly—and your coils are properly constructed—you will hear the steady audio tone of the generator at some point, probably at a low level. Use just enough injection so as to be able to hear the tone.

Peak up the signal with the r.f. amplifier and detector capacitors. If you suddenly hear what appears to be a heterodyne beating with the signal (sounding much like someone just switched on the b.f.o. with a conventional superhet) it means that the detector has "taken off." Adjust the r.f. attenuator to eliminate it. Re-peak the r.f. amplifier capacitor.

The goal in all this (when tuning for a.m. signals) is to secure maximum signal presence without having the receiver "take off" in oscillation. The attenuator and r.f. amplifier should be re-adjusted to the point where the set can just be coaxed out of oscillation with the throttle capacitor set very near to, but not at, minimum capacitance. This will be the most sensitive setting of



R.f. and detector coil sets for 160, 80 and 40. A variety of coil construction techniques were tried (see text) and they all worked.

the receiver for this mode.

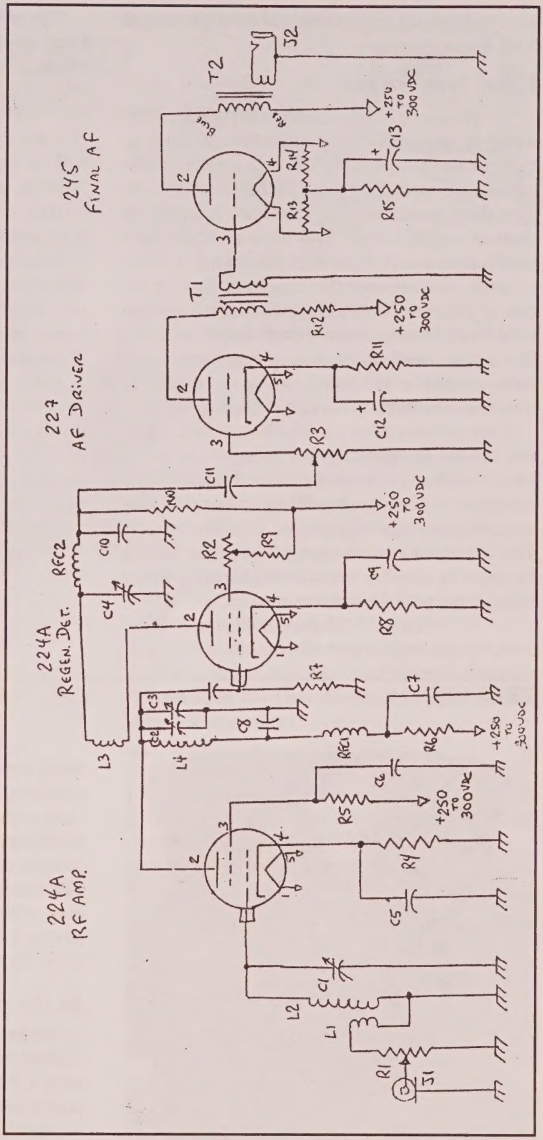
By slowly increasing the throttle capacitance, you will start to hear a rushing sound accompanying the signal. Continue to increase capacitance and you'll hear the telltale familiar heterodyne again as the detector breaks into oscillation.

It is at this point, now, that the receiver is most sensitive to cw and ssb. Strong signals at this setting of the throttle capacitor will, however, tend to overload the detector, causing signals to sound mushy (much like some inexpensive superheterodyne with inadequate BFO injection). More comfortable CW/SSB reception is attained with the throttle capacitor cranked past this point (specifically, adding more capacitance), and peaked-up in strength with another tweaking of the r.f. amplifier capacitor and (possibly) the r.f. attenuator.

If this process sounds repetitive, I'm afraid that's because it is! With the singular exception of the volume control, practically all of the controls are inter-active to one degree or other. Adjust one, and you'll probably need to re-adjust the other. But no, it's not as bad as it sounds. In fact, you'll amaze yourself at how quickly you get accustomed to the nuances and temperament of a radio like this.

About the only time I ever actually use two hands at the same time on the set is when I'm scanning the bands: I try to turn both the r.f. amplifier and detector capacitors simultaneously, roughly tracking one with the other, so as to keep both stages tuned roughly to the same frequency. Once I come across something of interest, I'll fine-tune all of the other controls to bring it up to the best possible listening level.

You should begin to feel comfortable with the tuning habits you learned with using the signal generator when you can turn the heterodyne effect on and off at will when receiving a dead carrier. Once you are able to correctly anticipate the reaction of the receiver with whatever adjustment you might try, it's



Schematic of the "Serious Regenerative Receiver." Drawing by Eddy Swynar.

time to hook-up an antenna and do some casual SWLing.

Final Impressions

In this digital, pre-boxed, microprocessed, world of no-tune instant gratification, as I put up my feet and comfortably listen in on ham radio roundtables with my regen, I'm amazed that the darn thing works as well as it does. It's nothing short of magic, I think, how we can obtain these results from a collection of orphaned tubes, components, and hardware that may have spent in excess of a human lifetime languishing in forgotten junk boxes in who-knows-where locations. I feel like a true, dyed-in-the wool experimenter and radio amateur every time I fire-up my regenerative receiver. What a wonderful feeling that is!

Your antenna need not be an elaborate affair. But as with any conventional receiver, the better the sky hook, the better the results. A random wire strung about a room will suffice for initial on-the-air testing, but again, be patient with the receiver. There is no a.v.c. with regens—it's very easy to be taken by surprise when tuning across a strong broadcaster with the volume cranked up!

The sensitivity of regens is legendary. When I first attempted to listen to the AWA Sunday afternoon AM net on 75-meters, I cussed aloud when I could just barely make out what Herb (K2JVM) was saying through my 'phones. (Herb's signal here is normally well in excess of S-9.+). Then it dawned on me that my Beverage antenna was not clipped to the six-inch long coaxial cable extension that was connected to the rig's antenna terminal!

Selectivity is superb as well, contrary to popular opinion. You simply peak everything on the one signal you're listening to, whatever the mode, and that's it. QRM is an issue only when one station climbs right on top of another.

I like to think that the relatively solid construction of my detector coils (with the exception, perhaps, of that awkward-looking contraption for 160-meters!) contributes much to the stability of the receiver. This characteristic I periodically measure by peaking an ongoing SSB net, and then leaving the set for an hour, or two, with it left on. Invariably, it takes but a minute touch-up of the bandspread capacitor to re-tune

(continued on page 49)

TELEVISION, *continued from page 40*

Our restored RGD 382-RG..

house H840CK15, made in early 1954. We also have a RCA CT-100 15 inch set and two early Motorola sets, one with a 19 inch tube and one with a 21 inch CRT; all made in 1954. Finally, we have Philco and RCA 21 inch sets made in 1955 and a Col-R-Tel attachment that converts small screen black and white sets to color using a rotating disk.

Our collection of early camera equipment is small but growing. At present we have late 40s image orthicon studio cameras from RCA and General Electric; iconoscope film chain cameras; a World War Two iconoscope camera used to direct a glide bomb to its target; and an early Dage 15 inch color monitor.

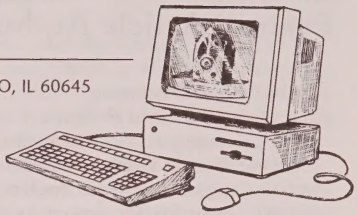
In the Future

We hope to renovate another 3000 square feet of display space this year to house a collection of early CRTs that has been loaned to the museum and to allow us to build a replica of an early television studio. We also need more space to house our growing collection. Another display in the planning stage is a re-creation of an early TV repair shop, with test equipment and tools from the late 40s.

The museum is open Saturday from 10 to 6, Sunday from 12 to 5 and by appointment. You can learn more about the museum and the collection at our website: www.earlytelevision.org, by writing to us at 5396 Franklin Street, Hilliard, OH 43221 or by phone at 614-771-0510.

ON THE INTERNET

EDITED BY **CHUCK SCHWARK**, 7454 N. CAMPBELL AVE., CHICAGO, IL 60645
PLEASE INCLUDE SASE FOR REPLY. E-MAIL: caschwark@aol.com



Vintage Hi-Fi Stereo on the Web

As I was contemplating the upcoming 50th anniversary of the AWA, I got to thinking what the electronics scene was like 50 years ago, in 1952. This was the Golden Age of Hi-Fi. Tube-based audio power amps, preamps, AM/FM receivers, integrated units, hi-fi speakers and the like. Many of the early companies were started by pioneers like H.H. Scott, Frank H. McIntosh and Dr. Sidney Harmon.

I've compiled a small list of links to sites featuring this classic equipment. Some are more extensive than others. Many have great pictures of legendary amps and receivers.

Vintage H.H. Scott Hi-Fi Stereo Archive by Lee K. Shuster

http://hhscott.com

The ultimate archive of information, phototours, schematics, manuals and history for aficionados of these classic components. Site also includes an E-List and a Web Forum.

The Fisher Radio Corporation
http://fisherdoctor.com/

Restoration services for all Fisher vacuum tube gear from 1937 to 1967. Manuals, tuner upgrades, parts, and cabinets.

McIntosh History Pages by Roger Russell
http://www.sundial.net/~rogerr/aboutmc.htm

History of the McIntosh Laboratory beginning with Mr. Mcintosh's consulting service in Washington, D.C. and continuing to the present day. Info on the Loudspeaker Division as well. Many references to good sources of info, as well as other McIntosh links.

Unofficial Dynaco Home Page by Greg Dunn
http://home.indy.net/~gregdunn/dynaco/

Website devoted to modifications, upgrades to (mostly tube) vintage Dyna gear, company information. Includes links to other Dynaco related websites.

Collector's Database for Marantz
http://www.classicaudio.com/marantz/mindex.html

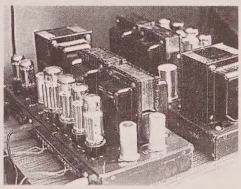
Once you get past all the ad banners, there are hundreds of pictures of this company's wide range of equipment.

Collector's Database for Pioneer
http://www.classicaudio.com/pioneer/pindex.html

This section of the Classic-Audio website is devoted to Pioneer. See Above.

Vacuum Tube Valley
http://www.vacuumtube.com/

VTV is a high-quality quarterly publication devoted to the colorful past, present and future of vacuum tube audio electronics. Charlie Kittleson is the Editor and Publisher of Vacuum Tube Valley. Charlie has been enjoying tube audio since 1964. He is the author of the famous Vintage Hi-Fi Spotter's Guides and producer of Vintage Hi-Fi-The Golden Era (a documentary video).



Harmon/Kardon
http://www.harmonkardon.com

Current company website. The "Our Story" section has a very brief history.

About Our
Feature Article Authors

DENNIS BANKER
Recreating the General Electric Octagon Scanning-disk Television Receiver

Dennis Banker holds a master's degree in electrical engineering from the University of Memphis, Memphis TN, and works for Boeing as an avionics integration engineer. He lives in St.Louis, Missouri and has been interested in antique radio and television for about 30 years.

WILLIAM B. FIZETTE
A Structured Approach to Fixing Up Those Nice Old Radios, Part 9—Restoration of a Meissner 8-tube "Combination" Kit Receiver

Bill is AWA's current president as well as Editor of The OTB's "The Comunication Receiver" column. His Bio appears in the February, 2000 issue.

JOSEPH G. JACKSON, M.D.
Asbestos Exposure And Radio Collecting

A native of Georgia, Dr. Jackson earned his MD at the Medical College of Georgia and completed his internship and residency training at Baptist Memorial Hospital in Memphis, Tennessee. He is a board-certified *radio*logist (pun intended) and an avid radiophile and radio restorer. For several years, Dr. Jackson was one of a limited number of radiologists in his region to be certified as a "B" reader—specializing in interpreting chest radiographs for evidence of occupational exposures such as asbestosis—hence his interest in writing this article. Has also written several articles for Antique Radio Classified and contributed widely to specialty medical journals.

NEAL MCEWEN, K5RW
An Unusual Artifact from the Tidewater Wireless Telegraph Company

Neal was born in North Texas and has lived there all his life. He took an interest in radio at an early age, when a grammar school friend showed him a crystal set. This eventually led to an amateur license in 1960. In 1977 he traded K5ZJP for his current callsign, K5RW. Neal's amateur activities consist of 99% CW on 40, 20 and 15 meters.

He holds a B.S. degree in Mathematics and works in the Information Systems department of a large telecommunications manufacturer. For the last 20 years, Neal has had a keen interest in collecting wire and wireless telegraph keys and related apparatus and artifacts. He also maintains a library of resource material on telegraphy from the 1860s forward. He has been the guest editor for the "Key and Telegraph" Column on two previous occasions.

Neal maintains a web page on a broad range of subjects for key collectors and historians. Called the "Telegraph Office," you can visit it at http://www.metronet.com/~nmcewen/tel_off.html

D.K. OWENS
Ohio's Radio Industry in the 1920s

Ken first became interested in electronics and radio as a high-school student during World War II. By the end of hostilities, he and a friend were operating a thriving radio repair shop. Ken's career as a full-time radio tech ended when he entered college, eventually earning both a B.S. and an M.S. in Chemistry. Ken pioneered in the development of Mylar, working with manufacturers using the material in such applications as capacitors, videotapes and audiotapes. He became a serious radio collector in the 1980s, a few years after his retirement, and specializes in 1920s broadcast sets. Ken is active in the Central Ohio Antique Radio Association, and frequently gives presentations on radio theory and radio history.

EDWARD P. SWYNAR, VE3CUI
A 1929 Amateur Radio Station for the New Millennium, Part 3 —A Serious Regenerative Receiver

Ed was first licensed as a radio amateur 30 years ago. A few years ago, he fulfilled a long-standing wish by building a 100% homebrew station based on 1960s technology. Not content with that, he later built a *second* 100% homebrew station—this time using 1929 parts and techniques. Ed belongs to DXCC, ARRL and AWA. He has received many awards, including RCC, WAS, WAC, and 5-band WAC, and has received certificates for his achievements in the ARRL DX and 160-meter contests the CQ 160-meter contest.

Though his contesting days are over for now, Ed loves building OT radio and experimenting with antennas on his 4 acre lot. He received a bachelor's degree in Economics and History degree from The University of Western Ontario (1974), and has been with the Quality Assurance department of General Motors for some 26 years. He has been previously published in *QST* and *CQ* magazines.

the net control station upon my return.

Our forebears certainly had an appreciation of the timelessness that constitutes a good, home-brewed receiver years before many of us were even born. Newkirk made reference to the passage that follows in his more recent contribution on the art in *QST* (see "Bibliography"). Such inspiration certainly bears repeating again. So... imagine yourself... intrepid Amateur Radio operator that you are!... comfortably seated before your homebrewed creation, discovering and rediscovering the thrills of short wave radio. Here's exactly how K.B. Warner put it in the 1930 edition of the A.R.R.L. *Radio Amateur's Handbook* (reprinted with the kind permission of the American Radio Relay League, Inc., Newington, Connecticut).

PARTS LIST

C1, C3—200 pF air variable
C2—15 pF air variable
C4—365 pF air variable
C5-C9—.001 µF disk ceramic
C10—470 pF silver mica
C11—.02 µF disk ceramic
C12—60 µF, 200 V electrolytic
C13—20 µF, 150 V electrolytic
J1—SO-239 antenna jack
J2—1/4" phone jack
L1—antenna link (see text)
L2—antenna coil (see text)
L3—tickler coil (see text)
L4—tuning coil (see text)
R1—500-ohm pot (linear taper)
R2—3M pot
R3—1M audio taper pot
R4—390-ohm, 1-watt
R5—300K, 1/2-watt
R6—27K, 1/2-watt
R7—9.1M, 1/2-watt
R8—15K, 1/2-watt
R9—2M, 2-watt
R10—560K, 1/2-watt
R11—2K, 1/2-watt
R12—22K, 1-watt
R13, R14—68-ohm, 1-watt
R15—1.5K, 1-watt
RFC1, RFC2—2.5 mH, 100-ma.
T1—interstage audio 3 1/2:1 ratio
T2—plate-to-voice-coil output

And now, when the receiver has been built, adjusted, and placed in satisfactory working condition, it will be permissible to sit back and take a long breath. For the receiver is one of the essential parts of an amateur station. If it has been correctly built and if the location of the station is satisfactory, it will receive as far as any transmitter can send. If it has open tuning scales; if it has lots of sensitivity and amplification; and if it is smooth and quiet in operation, it will be a very great comfort and a source of splendid pleasure.

Truer words were never spoken. To those who went before us: gentlemen I salute you...!

Transformer Sources

Antique Electronic Supply sells a good reproduction Stancor A-53-C 1:3 ratio audio interstage transformer (part #P-T156) for $14.95 (Antique Electronic Supply, 6221 South Maple Avenue, Tempe, Arizona 85283, U.S.A. ph. 480- 820-5411).

Play Things of The Past is an excellent source for transformers of all kinds, along with other vintage parts (Play Things of Past, c/o Gary Schneider, 9511 Sunrise Boulevard, #J-23, Cleveland, Ohio 44133, U.S.A. ph. 216-251-3714)

BIBLIOGRAPHY

Asson, Manfred. "Improved Regeneration Control for the Screen-Grid Detector," *Hints & Kinks for the Radio Amateur*. West Hartford CT: American Radio Relay League, Inc., Volume 2, 1943, p. 16.

Dudley, B. "A Simple 1750- and 3500-Kc. Receiver," *QST*, November 1929, pp. 27-76.

Dudley, Beverly. "The A.C. High Frequency Receiver," *QST*, January 1930, pp. 9-80.

Hull, Ross A. "High-Frequency Receivers for the Coming Year," *QST*, November 1928, pp. 9-17.

McFarlin, D.C. "The High Frequency A.C. Receiver at W8AYO," *QST*, April, 1930, pp. 23-26.

Newkirk, David. "A 40-Meter Regenerative Receiver You Can Build," *QST*, November 1992, pp. 35-39.

Rockey, C.F. *Secrets of Homebuilt Regenerative Receivers*. Bradley, Ill: Lindsay Publications, Inc., 1996;

Staff, A.R.R.L. *The Radio Amateur's Handbook*. Hartford, Ct: American Radio Relay League, Inc., 7th edition, 1930, pp. 53-73, 9th edition, 1932, pp. 53-72.

THE VACUUM TUBE

EDITED BY **LUDWELL A. SIBLEY**, 102 MCDONOUGH RD., GOLD HILL, OR 97525-9626

PLEASE INCLUDE SASE FOR REPLY. COPYRIGHT © 2000 LUDWELL A. SIBLEY.

25 Years: Saga of the *Saga*

This spring marks 25 years since Gerald Tyne's book *Saga of the Vacuum Tube* appeared. Remarkably, it's still available.

Tyne had originally written the *Saga* as a series of 22 articles in *Radio News*, appearing between March 1943 and April 1946. The serialized version was quite different from the book; it had extensive chapters on early electrical developments (long before the "Edison Effect" diode) and ended with tubes of ca. 1920 vintage. The author did substantially more research and writing in the '70s after retirement.

Tyne had a special advantage in terms of coverage of Western Electric tubes. While his main job at Bell Labs was in the area of magnetic components (transformers and the like), he had become the company's recognized expert on tube history and had been officially tasked with researching WE tube history for internal use.

The book was originally planned to be part of the then-current Arno Press "Historical Studies in Communications" series. That deal fell through, and the project went to Howard Sams, at least in terms of the printing work.

Tyne credited the Smithsonian Institution with supplying a money grant to produce the book. Apparently that was just a generous move on his part; the grant had been offered, but not used. However, the Smithsonian did supply a good deal of typing support and other production aid. After the book was printed, Tyne graciously presented the British Science Museum and several other European institutions with bound volumes of his photographs and other research materials.

The original printing was small but well received. AWA committed to buying a stock of copies, did a promotion on the book at the 1976 Conference, and mailed out prepublication order forms with *The OTB* at the end of the year. Dexter Deeley, AWA treasurer at the time, recalls mailing out hundreds of copies. As Bruce Kelley, the ever-enthusiastic *OTB* editor put it, "*Saga of the Vacuum Tube* may be the last great book on the subject . . . printing quantity will be limited, so we urge members to order a copy while they are available…in all probability there will be but one edition with little likelihood of a further printing. Remember what happened to *Tinfoil to Stereo*."

Kelley, for once, was wrong: this was not the "last great book" on tube history, it was the first! Later writers like John Stokes, Hisashi Ohtsuka, and Keith Thrower saw to that. However, Bruce certainly foresaw the book's early fate. As the first printing ran low, the book was "remaindered" at low price and became extinct.

We owe a major debt to the Fathauer father-and-son team, the then-proprietors of Antique Electronic Supply, for bringing the book back, ca. 1988. They took a bit of a gamble, as the printer's minimum order size was something like 3000 copies. They went ahead, changed the cover to its present design, and served as the wholesale source for other sellers. The present owners of A. E. S. have done a third printing, keeping the book available today.

Oddly, Kelley was the book's only champion among antique-radio editors. Neither *Radio Age* (in its pre-MAARC version), nor the *ARCA Gazette*, nor *Antique Radio Classified* mentioned it or its revival.

The book was originally available in paperback for $9.95 and hardback for $19.95, from the now-vanished "Vintage Radio." Today's $19.95 price (paperback) is much less in real terms than the original. There is one collector hint that may be helpful: photographs in the original blue-covered printing are of better quality than later on, so the old version is worth looking for.

The book has been such a comprehensive reference on pre-1930 tubes that it's almost distressing to come up with a tube not covered in it: "Nuts, this one's not in the *Saga*." Examples of tubes not covered include the odd Armor AC100 AC-powered triode and developmentals like the double-ended UV-199, the UV-212 and the pins-in-a-"W" UX-225. Still, for pre-1930 tubes the *Saga* remains the book of first resort.

New Books and Literature

DAVID W. KRAEUTER, 506 E. WHEELING ST., WASHINGTON, PA 15301 E-MAIL KRAEUTER@SGI.NET
PLEASE INCLUDE SASE FOR REPLY.

Books to be reviewed in this column should be sent directly to David Kraeuter at the address above. After review, all such books become a permanent part of The AWA Library, which is part of The AWA Electronic Communication Museum and is available to members for browsing and research.

Kentucky Farmer Invents Wireless Telephone: But Was it Radio? Facts and Folklore about Nathan Stubblefield
By Bob Lochte. Published 2001 by All About Wireless, P.O. Box 1194, Murray, KY 42071 or 51/2 by 8 1/2 inches, 230 pages, $16.95, paperbound.

I've been waiting for this one since first hearing about the featured inventor way back in graduate school more than 35 years ago. It's surprising nobody has done this before. But this appears to be the first book-length treatment on Nathan Beverly Stubblefield (1860-1928), the legendary Kentucky melon farmer who some (who don't know better) think invented radio years before Marconi. A member of the Murray State University faculty, Lochte has gotten behind years of local community hype to find out just what the man did—and did not—accomplish in a series of 1890s and early 1900s demonstrations. Bottom line: Stubblefield did invent a type of earth conduction point-to-point wireless service, but it was most assuredly NOT broadcasting.

What makes this self-published volume so useful is that Lochte has gathered more photos, patent reprints, and other information in one place than anybody else has managed over the years. While his findings won't please some of the Murray Chamber of Commerce types (who love to tout their town as the real birthplace of radio), they surely do place Stubblefield where he belongs—as an early telephone entrepreneur who pursued what turned out to be a wireless dead end. While purists might argue with Lochte's reference to his subject as "Nathan" throughout (they obviously did not know one another), that is a minor complaint for what is really a very well done biographical survey separating a bit of wheat from years of chaff.

The peak of Stubblefield's fame came in 1902 when his experiments were written up in several papers. But the story after that is all downhill...to his death from starvation in 1928. That's the tale told in the first 100 pages. Lochte goes an important and insightful step further, however, and relates how the myths have grown since 1928, including the tireless efforts of a grandson who knows nothing about radio and is better at grandstanding than real history.

Appendices include reproductions of Stubblefield's four patents, his 1902 statement on wireless telephony, a reprint of a 1902 *Scientific American* article, and reprints of an oft-cited speech and an article on which others have drawn. Photos include both historical and current material and are well reproduced. This is fascinating and readable stuff.

Christopher H. Sterling
George Washington University

♦ ♦ ♦ ♦

Classic Cones: Pictorial Reference and Value Guide for 1920s Radio Cone Speakers
By Buford and Jane Chidester. Published 2001 by Sonoran Publishing, LLC. (480) 961-5176, www.greengatebooks.com. 8 1/2 by 11 inches, 122 pages, softcover, $25.95.

As the hobby ages it is refined. Refinement frequently means specialization. Chidesters' book is a good example.

First there were only headphones, then came horn speakers. These provided needed volume but not much increase in frequency response. The next improvement, from about 1924 through 1929, were cone speakers. Instead of the small diaphragms of headphones and horn speakers, cone speakers used vibrating surfaces of from four to 36 inches and thus provided a wider frequency range than headphones could hope for.

Suggested current prices are offered for most of the 250-or-so cone speakers shown; some are listed only as rare or very rare. Some reproductions of original advertisements are included. As indicated by the subtitle, there is little text to this book, so don't look here for technical information or history.

Photographs are in full color, and this helps show that manufacturers' attempts to make these speakers attractive, as well as functional, fell

along a wide scale. Hence, some of these speakers will be perceived as beautiful, others as ugly, still others as so ugly they're beautiful. (Like some of us think of Atwater Kent Model 40 radios).

This book is typical of the high quality we have come to expect from the Sonoran Company. Visually, it neatly takes up where the many horn speaker contributions by Floyd A. Paul leave off.

♦ ♦ ♦ ♦

The Man Who Invented the Twentieth Century: Nikola Tesla, Forgotten Genius of Electricity

By Robert Lomas. Published 1999 by Headline Book Publishing Company, UK. Distributed in US by Trafalgar Square, (800) 423 4525. 5 1/4 by 8 1/2 inches, 248 pages, hardcover, $29.95.

Wizard: The Life and Times of Nikola Tesla

By Marc J. Seifer. Published 1996. Citadel Press Carol Publishing Group, (201) 866 0490. 6 1/2 by 9 inches, 540 pages, softcover, $19.95.

Lomas' book is a short, popular account with no footnotes. Seifer's scholarly study is based on his Ph.D. dissertation and is heavily documented. Both books present a life that can only be described as fascinating.

Poor Tesla. Nothing in his life was ordinary. He was by turns supremely brilliant and naive, wealthy and destitute, legally and illegally robbed, and a visionary genius who sometimes earned his keep by digging ditches. He never married and apparently formed few close relationships. He lived in hotels for most of his adult life, and often shared his rooms with pigeons. He learned through an article on the front page of the November 6, 1915 *New York Times* that he was to share a Nobel Prize with Thomas Edison. In a subsequent interview he expressed his gratitude to the world for finally recognizing the value of his work, only to learn later that the *Times* story was false.

Tesla (pronounced *TESH la*) gets an *A+* in electricity, but a much lower grade in business acumen. Legend says he sold the 40 patents for his AC polyphase system to Westinghouse for $1,000,000 (some writers report a much lower figure), plus a royalty of "one dollar per horsepower." Later he either relinquished this royalty, surely worth millions, or sold it back to Westinghouse for a paltry sum. Still later he testified that he thought at the time that Westinghouse was to have the royalty back only temporarily. For much more detail on these shenanigans, see the Seifer book.

One of the reasons Tesla's life is so intriguing is that so much of it, including the exact date of his death, ends in mystery. Some of this mystery is attributable to what Seifer says was Tesla's "irritating habit of...seeing projects completed before they actually materialized...."

Surely Tesla's most important idea, *i.e.,* the idea that had the most potential for benefiting humanity, was the transmission of electrical power without wires. Tesla sold his patents for this system to J. Pierpont Morgan. Morgan "sat" on these patents and thus stymied further development of them, possibly to protect his own considerable financial investment in Tesla's earlier wired system of AC power transmission.

So here is the question: could Tesla's system of wireless power transmission be made practical? If so, why has no one done it? Patents for the system were published 100 years ago. The fact that no one has achieved widespread wireless transmission of power to date would seem to indicate that Tesla's scheme cannot work.

Readers may argue forever over Lomas' list of major inventions claimed for Tesla: radio, the hydroelectric generator, AC power, fluorescent light, the rotary engine, the bladeless turbine and radio imaging. But who could quibble with an author who dutifully reports one of Tesla's lesser-known inventions, a significant enhancer of peristalsis? Tesla used the device, a variable-frequency vibrating platform upon which one stood, to successfully treat his indisposed friend Mark Twain.

These books can't help but make many of their readers Tesla simpaticos.

♦ ♦ ♦ ♦

Stay Tuned: A History of American Broadcasting

By Christopher H. Sterling and John M. Kittross. Published 2001 (third edition) by Lawrence Erlbaum Associates, tel. 1-800-9-BOOKS-9, e-mail orders@erlbaum.com. 7 by 10 inches, 975 pages, hardcover. $59.95.

Here is American broadcasting history in a 4.5-pound "nutshell." The first (1978) edition of this book was 562 pages long and the 1990 edition was 705. This is obviously an on-going project with much thought and work between editions. Thoroughness is the touchstone here, and the present edition is in fact several books in one.

Stay Tuned is designed to be used as a text for a college or university course, but it is so thorough in its coverage and so well-organized that it can be used several other ways. The text can be used as a chronology (what happened and when)

or as a history (what happened and why). In fact the book contains a separate 20-page chronology. But because of the book's extensive indexing and thoughtful organization, it can also be used as a single-volume encyclopedia of its subject. In addition to the usual table of contents, an "alternate contents" section lists information by topic, and each chapter is preceded by an outline and followed by a list of selected further readings. Used this way *Stay Tuned* can be seen as a companion to (or competitor with) Godfrey and Leigh's *Historical Dictionary of American Radio* (Greenwood, 1998) or Sies' *Encyclopedia of American Radio, 1920-1960* (McFarland, 2000) or Lackmann's *Encyclopedia of American Radio* (Facts on File, 2000).

A whopping 182 pages are devoted to four appendixes. The chronology is followed by a glossary with word "definitions" sometimes over a page long, making it a mini-book in itself. This is followed by a section of historical statistics (fun to dip into at random), and a 54-page selected bibliography. So another use of the book is as a guide to the literature. (But see also Sterling's *History of Telecommunications Technology: An Annotated Bibliography*, reviewed in the November 2000 *OTB*). The bibliography also contains three mini-appendixes: a list of web sites, museums, and libraries and archives. Inclusion of so much "value-added" material may tempt libraries to keep this book in the reference section, rather than circulating it.

Stay Tuned is a solid achievement on any scale. It is not for the casual hobbyist and hardware enthusiasts will be disappointed despite the color photos on the covers, but if you're looking for detailed, balanced introductions to virtually all other aspects of American broadcasting this will be a welcome find.

♦ ♦ ♦ ♦

New Reviews of Classic Literature

Armstrong, Edwin H. "A Study of the Operating Characteristics of the Ratio Detector and Its Place in Radio History," Proceedings of the Radio Club of America, 25:1-20 (1948).

Just as there are seminal books in the electrical engineering field, so too there are seminal papers. This paper by Armstrong, though not of prime value, is still important for two reasons. First, it is his public refutation of the originality of the ratio detector circuit, and second, it gives us an all-too-rare glimpse into his humanity.

Armstrong begins his paper with an historical precedent. His 1912 invention of the regenerative circuit had become well-known by late 1913. Early in 1914 Lee de Forest announced his invention of the ultraudion circuit, which he claimed was not a regenerative circuit but achieved the same results. But by simply redrawing de Forest's ultraudion circuit to include coupling and the inter-element capacitance of the tube, Armstrong was able to show that the ultraudion circuit was in fact his own regen circuit in disguise. Regardless, the U.S. Supreme Court (if not the electrical engineering community) ultimately found in favor of de Forest in 1934.

Then Armstrong turns to the main subject of his paper. In the early 1930s he had developed and patented his system of noise-free wide-band FM radio using limiter and discriminator circuits. Acceptance of Armstrong's FM inventions occurred not nearly as fast as with the regen circuit, which could quickly be incorporated into receivers and required no modification of the transmitting circuits. FM, however, required a complete new system. For years it must have seemed to Armstrong that no one cared or was listening when he promoted his new noiseless system.

But obviously someone was listening, for by 1947 David Sarnoff and RCA engineers, particularly Stuart Seeley, introduced a circuit which purportedly did the same thing as Armstrong's FM circuits, but, again, in a unique way. Seeley's circuit was called the ratio detector, and RCA was able to get the circuit patented despite Armstrong's earlier patents. (See my "Seeley Bibliography" in the *Pittsburgh Oscillator*, 16:12, December 2001.)

For Armstrong it was to be, as the redundant saying goes, "*déjà vu* all over again." Once more he found himself on the defensive. And once more, by a logical step-by-step redrawing of the ratio detector circuit, he was able to show that it was in fact merely a variation of his own original limiter/discriminator design. But when this paper was published in 1948 Armstrong still faced years of frustrating, expensive litigation with RCA over his FM circuits.

Note by the title of the paper that Armstrong wished to show the place of the ratio detector in radio history. He does that none too subtly on the last page. Just who might Armstrong have had in mind when he ended his objective, technical paper with this surprising (but still carefully footnoted) fillip?

That prophecy [made by Armstrong] was that the day would surely arrive when the direction of engineering by the members of the legal profession would come to an end, because the unholy mess that they had made of radio would soon be

(continued on page 63)

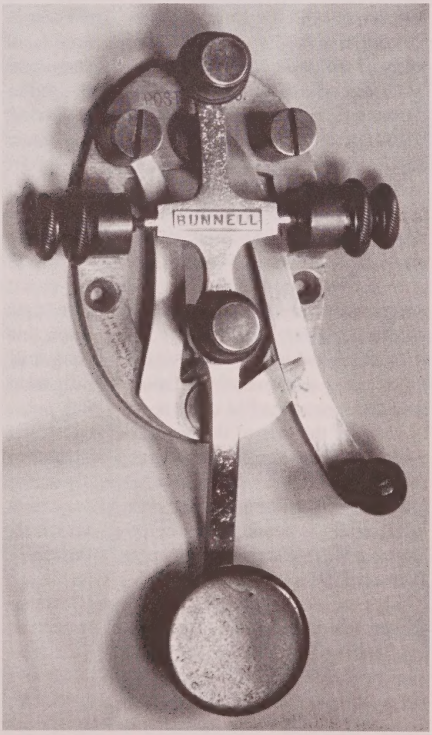
EDITED BY **JOHN CASALE**, W2NI, 3 PICKERING LANE, TROY, NY 12180
PLEASE INCLUDE SASE FOR REPLY.

The Evolution of a Triumph

© J. Casale, W2NI, 2002

Some of the most successful telegraph keys in U.S. history were the steel lever keys made by J.H. Bunnell & Co. They were produced by the hundreds of thousands and copied by many manufacturers. But because they seem to be so common, they are typically ignored by collectors and frequently sit unclaimed at the close of flea markets

Most of these keys have been incorrectly pigeonholed into a common category called "Triumphs." The steel lever key patented by Jesse Bunnell in 1881 was not a "Triumph," although the design was eventually used in that model. The top of the line key produced by J.H. Bunnell & Co., and specifically called the "Triumph," did not show up until twenty five years later.



Ca. 1906 Triumph with no bug lip, "Pat. Applied For" marking and rectangle-enclosed Bunnell logo.

As early as 1868, inventors and manufacturers were experimenting with various designs to prevent the brass lever from becoming loose on its steel axis when subject to consistent lateral pressures. This lateral movement produced a secondary problem called "sticking" that occurred when the lever was released. The key contacts would slide back across themselves instead of breaking clean, especially when closely gapped.

The heavier brass lever designs of the 1870s represented an attempt to minimize this problem, but the trade off was a heavy, less responsive action. During the 1870s-1880s, key manufacturers, including J.H. Bunnell & Co., worked to cure "sticking" with new designs.

Nine years before the Bunnell patent, Franklin Pope, one of the most respected telegraph engineers of the nineteenth century, talked about this problem in a July 1872 article.

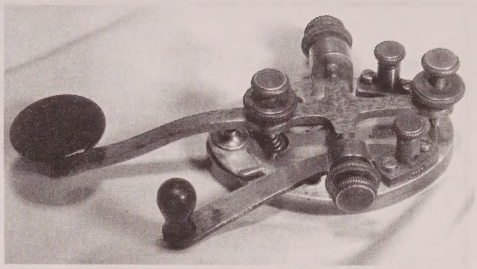
The lever is very apt to become loose on the arbor in the hands of many operators who "send" with a heavy side motion. It has been suggested, as the remedy for this, to have the lever cast either in the form of a cross or a hollow rhomboid...

Pope had the reputation of freely and unselfishly helping others with their designs. It was common for inventors to come to him for advice and he would frequently work with them to develop an idea, expecting nothing in return. The degree of Pope's involvement with Bunnell's invention is unclear. But what is clear is that Pope, who was also a patent expert, is listed as the patent attorney on Jesse Bunnell's historic February 15, 1881 steel lever patent. Bunnell's words in his patent, drawn up by Pope stated:

I claim as my Invention: A telegraphic key lever constructed...from a single piece of wrought metal in the form of a cross, of a breadth greater than its depth or vertical thick-

ness, and provided with trunnions formed upon the extremities of the traverse arms of the cross.

Jesse Bunnell's steel lever invention solved the problem of lateral stability and gave the operator a strong, lightweight, and responsive lever. The key shown in Bunnell's patent was a leg key. When it was introduced in 1880 it was called "J.H. Bunnell's Steel Lever Solid Trunnion Key," or simply "The Bunnell Key," and even before the patent was granted the keys were being sold in large numbers.



The solid-based "Legless Pattern Steel Lever Key" of 1881-1898.

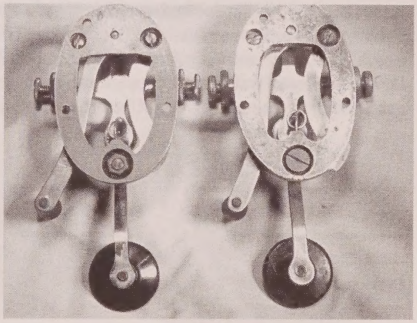
A legless version of the key was introduced in the spring of 1881. It was intended for use on "fine desks" that could not be drilled with the holes necessary for the under-the-table connections to a leg key. The "Legless Pattern Steel Lever Key" had a solid brass base and provided top-mounted binding posts.

The solid-base key was built until 1898 when the base was replaced with a hollow version that the Bunnell Company referred to as the "skeleton" base. This key was produced by Bunnell well into the teens and was sold with at least two variations in binding posts.

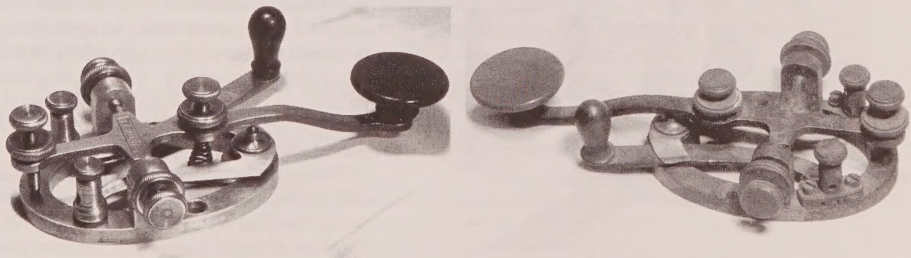
Beginning in March of 1906, the Bunnell Co. began putting out teasers about the coming of a new "legless key" that would be the "acme of perfection." Introduced as "the best regular key made," the Triumph made its debut in September of 1906. Also introduced was the new company logo, with the identification "Bunnell" enclosed in a rectangle on the lever.

The Triumph's rugged base differentiates it from the skeleton base of the Standard Steel Lever Legless key. This new base included thicker standards, a separate anchor for the circuit close, and solid binding post connections to the frame and the lower contact. A glaring difference, though, is the introduction of a new-style binding post. When considering all the different binding posts available to Bunnell at this time, I find it more than coincidence that a style was selected similar to that used by The Postal Telegraph Co.

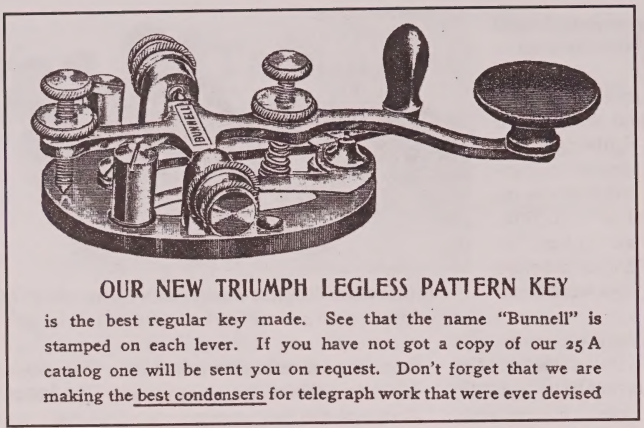
Faintly engraved and hidden on the bottom of the ca. 1906 Triumph pictured in this article, (which was made for The Postal Telegraph Co.), are the words "Pat Applied For." But no patent was issued and no reference to one has been found in any Bunnell ads or marked on later Triumphs. The only patent activity related to a legless key by J.H. Bunnell & Co. at this time was John Ghegan's patent for a key with an insulated



Underside views of "Standard Steel Lever" (left) and "Triumph" (right) keys.



Two variations of the skeleton-based "Steel Lever Legless Key" of 1898-1918.


BUNNELL
OUR NEW TRIUMPH LEGLESS PATTERN KEY
is the best regular key made. See that the name "Bunnell" is stamped on each lever. If you have not got a copy of our 25 A catalog one will be sent you on request. Don't forget that we are making the best condensers for telegraph work that were ever devised

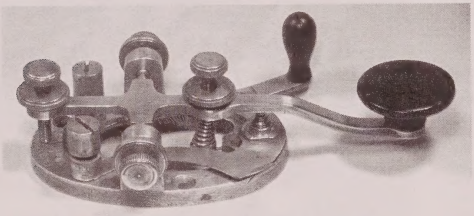
*Ad introducing the new "Triumph" legless key. (*From The Telegraph Age*, September, 1906.*

base with embedded conductors. Nevertheless, with this new design J.H. Bunnell & Co., under John Ghegan's direction, gave the commercial telegraph industry the most widely used legless key in U.S. history.

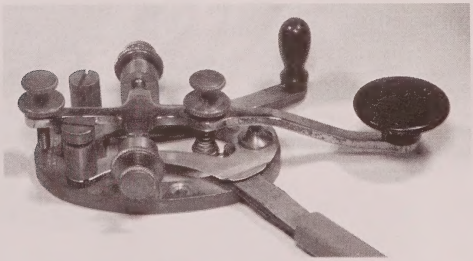
By 1918, Bunnell upgraded their skeleton-based Standard Steel Lever Legless key and gave it a design that looked very similar to the Triumph's. The new standard legless got the Triumph's base and its slotted-screw binding posts. It also received a new-one piece lower contact assembly and customers could select either silver or tungsten contact points. 1918 also saw the introduction of a new Bunnell logo with "Bunnell S" stamped on the lever. Later Triumphs had no markings at all.

Bunnell's advertising copy describing the improvements made to the 1918 Triumph was somewhat vague, using phrases like "other valuable improvements." But the differences that justified the Triumph's higher price tag included tungsten contact points as standard, the use of slotted nuts instead of screws on the binding posts, a unique lower screw contact assembly (similar to a Vibroplex screw contact), and mica insulation.

It appears the thin mica insulators may not have been able to withstand the constant vibration. Many repaired Triumphs from this era have had the mica replaced with fiber/rubber insulators and the 1924 ads described the insulation as "improved" rather than "mica." Both keys now included a "bug lip" to facilitate the use of a wedge when an operator wanted to use his bug. Previous to this it was common for an operator to place his wedge in line into the circuit closer's lip. 1918 also shows the use of another new Bunnell logo with "Bunnell S" stamped on the levers. Later Triumphs had no lever markings at all.



A post-1918 "Triumph."



A post-1918 "Standard Steel Lever Legless" with a bug wedge.

These two excellent keys are the most commonly found Bunnell keys today. Looking at them side by side, it's often hard to distinguish a Triumph from the Standard Steel Lever key. But original, post-1918 Triumphs will have all three of the following differences: Viewed from the top, a Triumph will have slotted nuts on the binding posts and a squared-off retaining nut on the lower contact assembly. Viewed from the bottom, the lower contact on a Triumph shows a screw head and on the Standard Steel Lever key there is a nut.

There are frequent discussions on the air and on Internet reflectors about the best straight key to use. It is amazing that the Triumph is rarely suggested. Yet here you have a rugged, brass-based key with a

(continued on page 63)

BY NEAL MCEWAN, K5RW

An Unusual Artifact from the Tidewater Wireless Telegraph Company

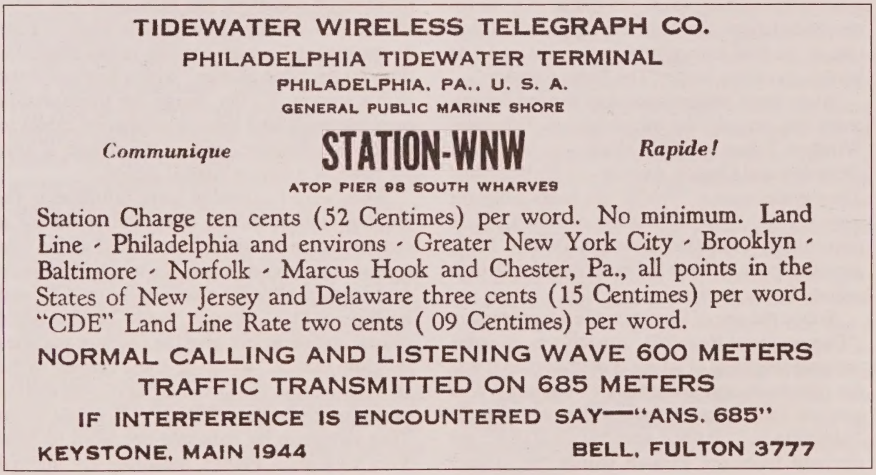
Although the item featured in Figure 1 isn't a piece of wireless hardware, it is nonetheless part of the legacy of wireless telegraphy and a different kind of wireless collectable. Without seeing and feeling this item, you would never know that it is an ink blotter. Before the age of ball point pens, there were fountain pens. After writing on paper, it took time for the ink to dry. If you needed the ink to dry quickly or you wanted to prevent an ink run, you carefully laid an ink blotter over the text or signature.

Blotters were made of thin absorbent cardboard and were a convenient and inexpensive advertising medium. Advertising blotters were commonly given to customers by banks, department stores, and other businesses such as The Tidewater Wireless Telegraph Co. Very little has been written about Tidewater Wireless. But, by examining this blotter, we can gain some insights into how this company, and other wireless service organizations conducted their business.

What is the vintage of this blotter? The 1914 "Amateur Wireless Handbook" list of ship and shore call signs shows "WNW" assigned to the *S.S. San Ramon*. Marconi's 1918 *Yearbook* also shows the call attached to that ship, and adds that it is operated by the San Ramon Steam Ship Company. Only two coastal stations in Philadelphia are shown in the Marconi *Yearbook*, the Navy's "NAI" and Marconi's "WHE." WNW was still assigned to the *San Ramon* in 1922, according to a Bureau of Navigation call sign list of that year.

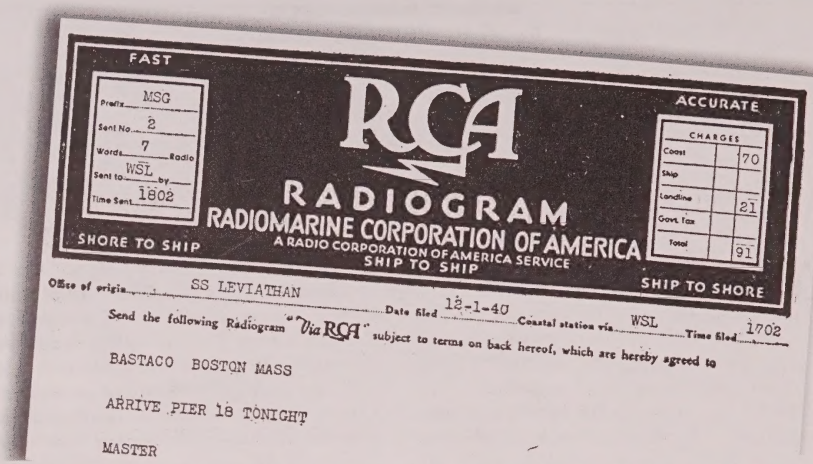
The 1943 ITU call sign listing shows "WNW" as Philadelphia Radio, which was likely a later name for Tidewater. Therefore, the date of this blotter can reasonably be established to be after the call sign was reassigned and before Tidewater changed its name from Tidewater Wireless Telegraph to Philadelphia Radio — anywhere from 1923 to the early 1940s.

The Tidewater Wireless Telegraph Co. seems to have operated only the one station in Philadel-


TIDEWATER WIRELESS TELEGRAPH CO.
PHILADELPHIA TIDEWATER TERMINAL
PHILADELPHIA, PA., U. S. A.
GENERAL PUBLIC MARINE SHORE
Communique
STATION-WNW
Rapide!
ATOP PIER 98 SOUTH WHARVES
Station Charge ten cents (52 Centimes) per word. No minimum. Land Line - Philadelphia and environs - Greater New York City - Brooklyn - Baltimore - Norfolk - Marcus Hook and Chester, Pa., all points in the States of New Jersey and Delaware three cents (15 Centimes) per word. "CDE" Land Line Rate two cents (09 Centimes) per word.
NORMAL CALLING AND LISTENING WAVE 600 METERS
TRAFFIC TRANSMITTED ON 685 METERS
IF INTERFERENCE IS ENCOUNTERED SAY—"ANS. 685"
KEYSTONE, MAIN 1944
BELL, FULTON 3777

The Station WNW advertising blotter.

COPYRIGHT 1997, 2001 BY NEAL MCEWEN NMCEWEN@METRONET.COM


FAST

Prefix MSG
Sent No. 2
Words 7 Radio
Sent to WSL by
Time Sent 1802

RCA
RADIOGRAM
RADIOMARINE CORPORATION OF AMERICA
A RADIO CORPORATION OF AMERICA SERVICE
SHIP TO SHIP

ACCURATE

CHARGES	
Coast	70
Ship	
Landline	21
Govt. Tax	
Total	91

SHORE TO SHIP

SHIP TO SHORE

Office of origin SS LEVIATHAN Date filed 12-1-40 Coastal station via WSL Time filed 1702

Send the following Radiogram "Via RCA" subject to terms on back hereof, which are hereby agreed to

BASTACO BOSTON MASS

ARRIVE PIER 18 TONIGHT

MASTER

1940 Radiogram sent from S.S. Leviathan to station WSL. Prefix was "MSG," indicating ship's business.

phia. A 1944 map of coastal radio stations open to public messages in the 600 meter to 750 meter band shows 28 stations, but "WNW" is the only Tidewater station listed, making it a loner among stations operated by giants such as RCA, MacKay Radio and Tropical Radio.

Not much else is known about the Tidewater Wireless Telegraph Co. However A. L. Frankenfield, ex 3AK, mentions the station in a 1933 letter to the Franklin Institute's Communications Section. He describes building a high-power synchronous rotary spark gap transmitter for his amateur station. Frankenfield states that it was one of the best transmitters in the area and was known by others as the "The Stone Crusher."

When spark transmission was banned for amateur use, he sold the transmitter to Tidewater Wireless Telegraph Co., which was located at Delaware and Oregon Avenues in Philadelphia. The rig was used at "WNW" 24 hours a day for over a year. After the station obtained a tube transmitter, Tidewater's owner, Donald Haig, gave the spark set back to Frankenfield with high praises for its service.

Notice the use of French in the advertisement ("Communiqué Rapide"). French was an international language of wireless operators as it was for diplomats and academics of the same time period. For example, voice distress signals "MAYDAY," "PAN," and "SECURITY" are derived from the French words "m'aider," "panne," and "sécurité," meaning "help me," "accident," and "safety," respectively. Also note the use of French currency. A "Centime" is 1/100th of a Franc, analogous to our "cent."

The international monetary exchange unit for ships and wireless stations was "Gold Francs." There were never any "Gold Francs" coined; it was a kind of theoretical currency used for quoting or billing message rates. For many years the conversion was approximately three "GFs" per U.S. dollar.

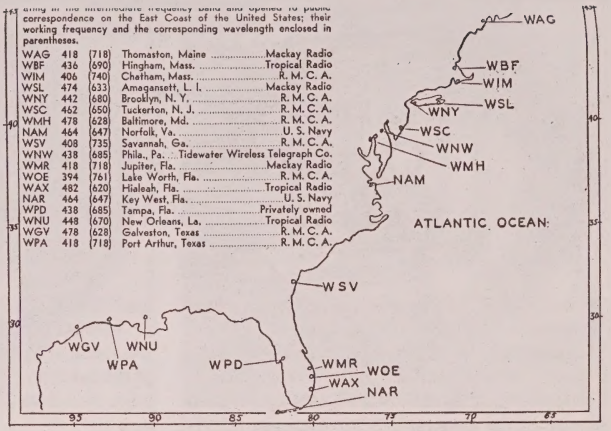
The Marconi *Yearbook* of 1918 shows the per-word rate for all land and shore stations in Francs. The charge for a radiotelegram was either a minimum charge or calculated by the number of words in the message. The total charge was summed from several parts: 1.) the "coast charge," which accrued to the coast station, 2.) the "ship charge," which accrued to the ship's station, 3.) the charge for transmission over telegraph land lines or submarine cables to the final destination, and 4.) the charge, if any, for relay by a ship or coastal station.

Ships were required to carry information regarding coastal station rates, but could ask a coastal station for rates if needed. If a ship was approaching a foreign port, the wireless operator could inquire what the coast charge or "CC" and landline or "LL" charges would be. The local coastal station would give the operator the rates in "Gold Francs," which he could convert to the ship's currency. The Q-signal "QSJ" was used to obtain or give rates. "QSJ NYC" would mean "The charge to be collected per word to New York City is .... Francs, including my internal telegraph charge."

All ships operators were required to keep an "abstract." This was an accounting sheet for each message sent and received. It recorded money

collected and money due the originating ship, shore station, other radio service companies (for relayed messages) and any other agencies involved in the message delivery.

Money generated by messages concerning official ship's business was not collected by the radio officer, but billed to the steamship company. Only money from personal messages from passengers and crew was collected. At the end of a voyage, the wireless operator was required to mail the "abstract," with a money order or check for the money collected, to the company controlling the radio service of the ship (such as RCA or MacKay). The accounting department of the radio service company would then pay all entities any money due.


correspondence on the East Coast of the United States; their working frequency and the corresponding wavelength enclosed in parentheses.
WAG 418 (718) Thomaston, Maine ..... Mackay Radio
WBF 436 (690) Hingham, Mass. ..... Tropical Radio
WIM 406 (740) Chatham, Mass. ..... R. M. C. A.
WSL 474 (633) Amagansett, L. I. ..... Mackay Radio
WNY 442 (680) Brooklyn, N. Y. ..... R. M. C. A.
WSC 462 (650) Tuckerton, N. J. ..... R. M. C. A.
WMH 478 (628) Baltimore, Md. ..... R. M. C. A.
NAM 464 (647) Norfolk, Va. ..... U. S. Navy
WSV 408 (735) Savannah, Ga. ..... R. M. C. A.
WNW 438 (685) Phila., Pa. ... Tidewater Wireless Telegraph Co.
WMR 418 (718) Jupiter, Fla. ..... Mackay Radio
WOE 394 (761) Lake Worth, Fla. ..... R. M. C. A.
WAX 482 (620) Hialeah, Fla. ..... Tropical Radio
NAR 464 (647) Key West, Fla. ..... U. S. Navy
WPD 438 (685) Tampa, Fla. ..... Privately owned
WNU 448 (670) New Orleans, La. ..... Tropical Radio
WGV 478 (628) Galveston, Texas ..... R. M. C. A.
WPA 418 (718) Port Arthur, Texas ..... R. M. C. A.
WAG
WBF
WIM
WSL
WNY
WSC
WNW
WMH
NAM
ATLANTIC OCEAN
WSV
WGV
WNU
WPA
WPD
WMR
WOE
WAX
NAR
95
90
85
80
75
70
65

A 1944 map of Atlantic coastal stations shows only WNW as operated by Tidewater.

An operator was graded, in part, on the quality of his abstracts. Tidewater was charging 52 Centimes per word for the listed destinations served by their arrangements with a local telegraph company, probably Western Union or Postal Telegraph. There was a surcharge of 15 Centimes for New Jersey and Delaware destinations. Ships needing to deliver messages to other locations would contact a shore station serving those areas if in radio range.

The "CDE" on the blotter is an abbreviation for a class of message: coded radiotelegram. This type of radiotelegram is normally used for business communications between the ship's Master and the shipping company. Both the sender and receiver used code books. A group of letters, that appear to be random, actually represent a sentence or phrase. "CDE"-prefixed radiotelegrams were delivered at a reduced rate.

There were many other types of message classes including "P," an ordinary radiotelegram, "MSG," a radiotelegram relating to the ship's business, and "OBS," a meteorological radiotelegram originating with the Weather Bureau. "GOVT" was a official government radiotelegram and had priority over any other types of traffic except "SOS" and other distress messages.

The type of message was part of the message prefix. Thus "P" would appear in the "prefix" field for an ordinary radiotelegram. These message types were universal for all wireless service companies.

Notice the "1944" after "Keystone, Main." This is not a date, but part of a telephone number. "Keystone" and "Bell" were no doubt competing phone companies; "Main" and "Fulton" were the telephone exchanges. These telephone numbers were called to originate a message from Tidewater.

The "Normal Calling and Listening Wave 600 Meters" is a wavelength which translates to a frequency of 500 kilohertz. It was reserved for message traffic calling and for distress signals until just a few years ago. Tidewater, as did other wireless companies, listened for calls on 600 meters, then moved off frequency to pass the traffic. Ships would likewise listen for the coastal stations to see if there was any traffic for them. Coastal stations routinely broadcast a list of ship's call signs for which they had traffic.

This blotter was used as a bookmark in a book given to me by Harry R. Lord, ex 8WY. A former sparks, he was on Navy and merchant ships from 1917 to 1941. Harry made seventeen trips to Europe during World War I as the radio operator of a troop ship. His wireless stories were spell binding. He and his brother Bruce had a state-of-the-art amateur wireless station in Cambridge Springs, PA before and after World War I. I am grateful that He chose to give me this unique wireless collectible, and with it the opportunity to find out more about wireless service companies.

Thanks to John Alcorn, Donna Halper and Mark Dittmar for supplying call sign references for "WNW." And a special thanks to Jack Lally,

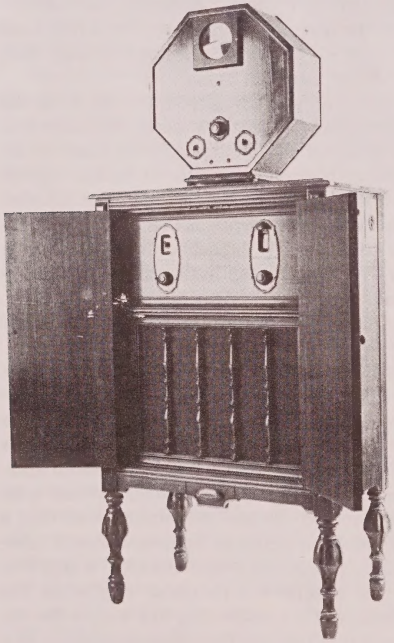
(continued on page 63)

DENNIS BANKER

Recreating the General Electric Octagon Scanning-disk Television Receiver

I had wanted, for some time, to build some version of a mechanical television receiver. However, all of the examples I looked at seemed to be very difficult for someone with limited resources and tools. A few years ago, I saw a picture of the General Electric Octagon television set and thought it might be a candidate for duplicating. After seeing additional pictures on the internet, I resolved to attempt to copy it as closely as possible.

This set has a very interesting past — being used in 1928 to receive "The Queen's Messenger," the first televised play in the U.S. G.E. never mass-produced this receiver due to lack of televising standards and recognized limitations of the current technology. It is estimated that no more than three or four of the original receivers now survive.



G.E. Octagon TV receiver sits atop RCA radio receiver. From The OTB *for May, 1989.*

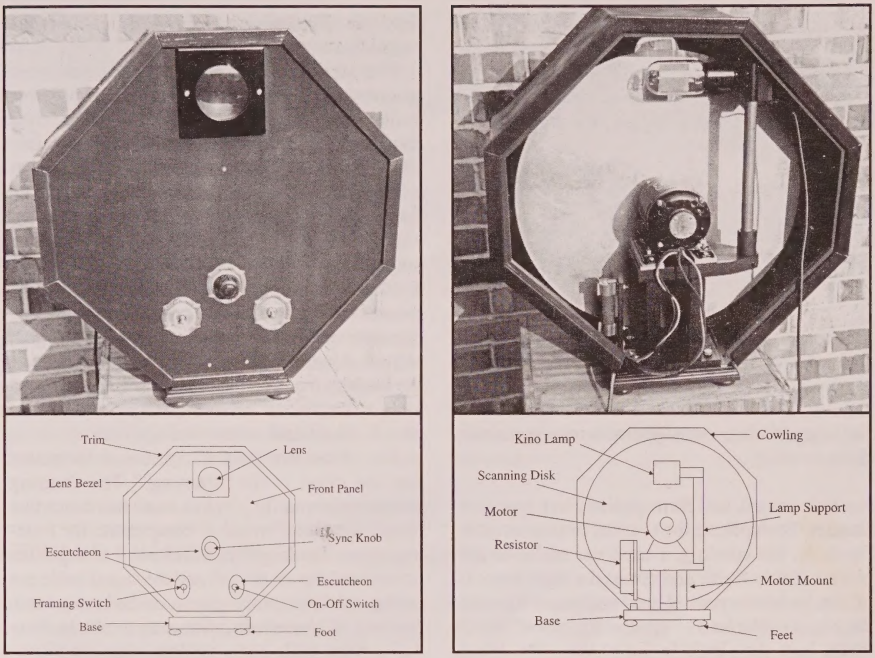
You'll find additional information about this set on the Internet under the topic "mechanical television." There's also an article about it in the May, 1989 issue of *The OTB*. The Henry Ford Museum in Michigan has an example of the receiver, although I haven't yet been able to see it in person. *Radio News* wrote up the Octagon receiver in a December 1928 article.

Pete Yanczer of The Experimental Television Society sent me some pictures with better detail than I could find elsewhere; especially helpful were the close-ups of the scanning-disk.The Society's web site is http://pyanczer.home.mindspring.com/Tour/home.html. There you will find several historical and construction articles on mechanical television. I participated in an ETS conference last August, and showed the completed Octagon receiver.

This set seemed relatively easy to duplicate because of its simple construction. There were no complicated shapes or carved wood pieces. From what I could see in the photos, the front seems to have been made from some kind of plywood, and the front and back borders made from wood trim. One color photo from the web site showed the wood finish to be similar to a late 1920s-early 30s lacquer finish, a medium dark brown like many radio cabinets of that era.

The cowling appeared to be made from bent sheet metal. The base was a small piece of wood with a simple ogee cut around the edges. The feet seemed to be small rounded wood disks or possibly stylized animal claws. The drive motor sticks out the back by about two inches and the lamp mounts horizontally behind the scanning-disk near the top with some kind of adjustable

AUTHOR'S ADDRESS: 341 SADDLE BACK DRIVE, ST. LOUIS, MO 63129



Front and back views of the completed G.E. Octagon replica.

metal arm. It was difficult to determine what the front bezel that held the 4-inch lens was made of—possibly either Bakelite or wood stained a dark color (black?). From the photos I concluded that at least two variants were constructed in 1928—one had a lens bezel and the other had the lens framed in wood trim. The scanning disk was a lens disk with 48 holes (some sources say a 24 hole disk was used).

Photos taken while the play was being telecast show one television receiver, acting as a monitor, with the back cover on and another photo without its back cover. It looked like the disk motor was mounted on a frame that allowed some movement for adjustments. There appeared to be an L-shaped arm extending up, with a socket attached horizontally to hold the lamp.

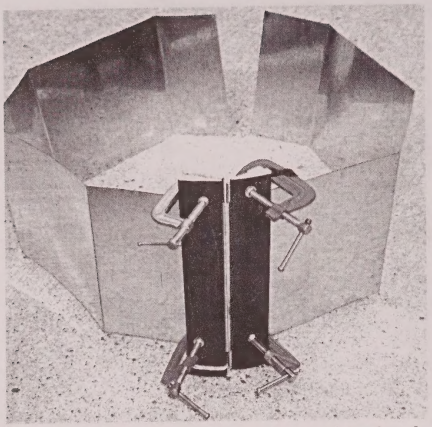
I obtained a nice piece of plywood for the front panel and decided to use some of it to make the lens bezel as well. Sheet steel used in heating ducts was used for the metal cowling. I found a decoupage plaque that was a good match for the base and used wood toy wheels obtained at an arts and crafts store for the feet. Standard wood trim chosen to match the trim in the photos and front panel was easy to find at my local hardware store.

The lens was a major problem. It seems that large lenses are becoming scarce. I thought a reading glass lens would serve nicely, but all the modern ones had that binocular bubble in them and were not suitable. After some searching, I found a three-inch diameter lens that looked good. It seemed to magnify the image about 2X when viewed from 2-3 feet away.

I was very fortunate to find an 1800-rpm motor that looked right for the era at a hamfest. An 1800-rpm motor would give a frame rate of 30 per second. I had bought a 16-inch diameter 48-hole scanning disk from Pete Yanczer some time back hoping to use it on a project like this and it looked like a good choice. I also have one of Pete's 900-rpm motors and may experiment with it also.

I have an original Raytheon Kino Lamp for use as the light source, but I may use a substitute first such as a neon pilot lamp array or a group of LEDs and Pete Yanczer's driver circuit before risking this lamp. I used Radiola 18 switch plates and knobs for the controls and switches—just as on the original. These are relatively common, but in a pinch, if you had only one switch plate you could make a cast of one in plastic and duplicate the other two.

I decided to try the a method described on the web for recreating a '30s lacquer finish to finish the front panel and edge trim. I used wood filler,



Jury-rigged sheet-metal brake for making bends in the cowling.

sanded, stained, and then applied clear spray-on lacquer. To duplicate the original brown-wrinkle finish on the cowling, I used the easier-to-get black wrinkle finish and sprayed a light topcoat of regular brown paint. I used sandpaper to make the edges of the lens bezel slightly curved, since that's how they look in the photos. The bezel was then painted black.

Using the 16-inch scanning disk dimensions as a starting point, I laid out the octagon shape for the front panel and cowling on paper. I chose a width of 18 inches to provide enough clearance for the scanning disk while adhering to the original dimensions as closely as possible. I had to make an educated guess at the original dimensions by measuring from the photos.

The first photos I found appeared to show the octagonal shape with the sloping sides slightly longer than the other sides. I tried to match this shape with my version. Photos I saw later show all the octagonal sides as being equal, so my version may not be as accurate as it should be. I do plan to make a more accurate version at some later date.

I made a cardboard duplicate of the front panel that proved valuable for marking the location of the scanning disk and making other key measurements. The octagon shape was cut out using a scroll saw. To bend the metal cowl, I made a small metal "brake" from C-clamps and tapered wood pieces. Since the metal cowling is only 8 inches deep, it was no problem to adequately C-clamp down the wood pieces. This arrangement made a fairly sharp bend, although a real metal brake would work better. I made the trim by measuring the angles on the cardboard duplicate and cutting the angled sections with a hand saw. The accompanying pictures show the parts lay out prior to assembly.

The switch plates and control knob were mounted on the front panel as closely as possible to their positions in the photos. I didn't have the resources to duplicate the synchronizing phonic wheel assembly. This would require a set of electromagnets, a soft iron toothed wheel with the number of teeth equal to the number of scanning holes, and a lever mechanism to rotate the magnets.

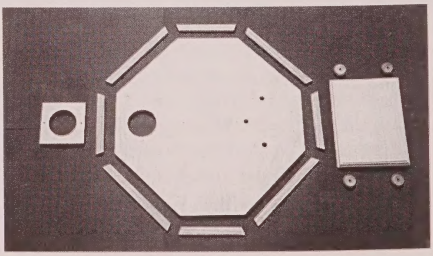
One solution might be to use a small power transformer core with two primary windings on opposite arms of the core and a standard gear about 2-3 inches in diameter. However, I did use the knob at that position to control motor speed with a rheostat. I left room enough to try the phonic wheel and control linkage later.

One of the two control switches is for power and the other is for "framing." The framing switch momentarily cuts in a small resistance that "jogs" the motor speed to compensate for framing errors. Looking from the rear, I brought the power cord out on the left and the signal cable out on the right. A replica version of the brown cloth covered AC power cord was easy to obtain. Several antique radio parts vendors carry it now.

I have applied power to the receiver and it seems to work. I can get a lighted field similar to a raster. It is somewhat dim due to the Raytheon Kino lamp I used, but is probably similar to what was received in 1928. The television images were usually viewed in a darkened room.

This system was capable of receiving halftone images, but silhouettes reproduced best. A 48-line picture has low definition, but under optimum conditions could reproduce faces.

To get an actual picture, I will need a camera with a 48-hole disk, a photocell and an amplifier. I haven't yet assembled a camera, but it is next on the agenda. There is talk among the mechanical television community of making a CD that could serve as a signal source for mechanical television receivers, thus eliminating the need for making a camera.



Cabinet parts laid out prior to assembly.

This was an interesting project in a number of ways. Much of the work I did could no doubt have been done better with more sophisticated shop tools. However, one reason I undertook this project was to show what can be done with limited resources. I had an electric drill and a scroll saw, but all the rest was done by hand. G E meant for this receiver to be mass marketed and therefore designed it to be easily manufactured. The basic cabinet can be built and a number of different motors, disks and lamps used for experimental purposes—preserving the look of 1920s technology but also enabling a great deal of experimentation.

BOOKS AND LITERATURE, *continued from page 53*

apparent to everyone. The writer [Armstrong] predicted that engineering would again be directed by engineers, and he even ventured to think that the day might arrive when some highly successful executives would come to believe that there was something after all to the text of the Eighth and Ninth Commandments (Protestant numbering, generally) stating that in case the audience could not immediately place them by number that they were "Thou shalt not bear false witness against thy neighbor" and "Thou shalt not steal."

KEY AND TELEGRAPH, *continued from page 56*

nickel plated steel lever, along with tungsten contacts, that was used by thousands of professional telegraphers.

J.H. Bunnell & Co. built the Triumph for Western Union, The Postal Telegraph Co. and countless railroads. The key is symbolic of twentieth century landline telegraphy itself, and fine examples are still available at flea markets for usually under thirty dollars. The ca. 1906 Triumph and the full nickel plated version shown in this article were found in a neglected condition at a recent AWA convention for fifteen dollars each.

John Lennon once wrote: "Life is what happens to you while you're busy making other plans." Well, you might consider using a Triumph while you're busy looking for that "perfect" key.

Sources

The Telegrapher, June 27, 1868, July 27, 1872
Journal of The Telegraph, June 1, 1880, August 1, 1881, October 20, 1914
Telegraph Age, 3-16-1906, 9-16-1906
The Berkshire Courier, October 17, 1895
U.S. Patent 237808
J.H. Bunnell & Co. Catalogs 28, 29

AN UNUSUAL ARTIFACT, *continued from page 59*

former radio officer and operator at coastal station "WSL" and to David Ring, former radio officer, for reviewing this article and making suggestions.

References

Frankenfield, A. L., *How I Built a Rotary Gap Spark Transmitter*. Letter to Franklin Institute, reprinted in *The Old Timer's Bulletin*, Vol. 26. No. 1, Antique Wireless Association, 1985.

Redwood, Ray. *QTC (I have a message for you)*. Sequoia Press, Austin, Texas, 1989.

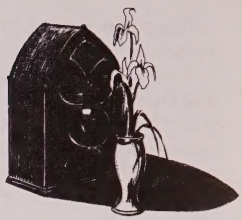
Strichartz, M. H. *Marine Radio Manual*, Cornell Maritime Press, New York, 1944

The Year-Book of Wireless Telegraphy & Telephony 1918, The Wireless Press, LTD., London, 1918.

Reese, Warren, in an Email to Neal McEwen, 26 May 2001. Discussion of international monetary exchange standard for ship and shore stations and discussion of arrangement of shore stations with landline companies. (Warren Reese was an operator at the now silent coastal station "KPH").

For more information, visit the Telegraph Office home page http://fohnix.metronet.com/~nmcewen/tel_off.html

RECENT RADIO, TV AND ENTERTAINER OBITUARIES



COMPILED BY **CHARLES S. GRIFFEN W1GYR**
1225 NEW BRITAIN AVE., WEST HARTFORD, CT 06110-2405

Note: When known, the date of death is indicated in parenthesis.

SHELDON ALLMAN, 77, (1-22-02) actor and songwriter. Allman was the singing voice for "Mister Ed," the talking horse on the CBS (1961-1965) television comedy series. He composed the music for the program including *Pretty Little Filly With the Pony Tail* and *The Empty Feed Bag Blues*. Some of his other TV credits include *Harris Against the World* (NBC 1964-1965), *Little House on the Prairie* (NBC) and *I Dream of Jeannie* (NBC). Allman wrote the theme music for *Let's Make a Deal*, (NBC/ABC) and for the cartoons *George of the Jungle, Super Chicken* and *Tom Slick*. He began his career in Los Angeles in 1949.

PAUL BARTLETT, 86, (1-13-02) broadcast executive. In 1942 Bartlett built and managed KFRE(AM) in his hometown of Fresno, CA. Later he put KRFM(FM) on the air followed by KRFE(FM). By 1956 he was the owner of KFRE(AM), KERO(AM) Bakersfield and had started work on KFRE(TV)—now KFSN(TV) Fresno. Bartlett sold his broadcasting interests in the late 1950s but returned to broadcasting in 1967 when he became President of WNYW(AM) and WRFM(FM) New York City. He returned to Fresno in 1982 to become President of KSEE(TV) and a year later sold the station.

CASPER H. CITRON, 82, (1-1-02) radio host. Citron broadcast serious interviews with famous political and artistic personalities from the lobbies of New York City hotels for 43 years. His program was syndicated nationally. In Manhattan it was heard on WRFM for 10 years, for 15 years on WQXR and for the last 14 on WOR. Citron's first broadcasts originated from the Hotel Pierre in 1958. He continued to be heard four or five days a week and never missed a program until he became ill recently. Citron also wrote books and a political column for the *Village Voice*.

EDWARD DOWNES, 90, (12-26-01) opera quizmaster. Downes is probably best remembered as the longtime host (1958-1996) of the Texaco Opera Quiz heard during the live Metropolitan Opera radio broadcasts. During the intermission, Downes would ask questions of three opera experts adding his own comments when appropriate. The format proved popular with millions of Saturday afternoon listeners. Downes was also a music critic for *The New York Times* (1955-1957) and wrote program notes for the New York Philharmonic (1960-1978). At various times he taught at Wellesley College, the Longy School of Music, Queens College and the University of Minnesota.

PETER GZOWSKI, 67, (1-24-02) writer and broadcaster. Gzowski was the host of *Morningside* which was heard on CBC Radio from 1982 to 1997. The three-hour weekday program contained engaging conversation, debate, personal essays, music and drama. In 1978 Gzowski was host of a late night television talk show *90 Minutes Live* on CBC-TV. He also wrote books, worked for a number of newspapers and magazines and at 28 was the Managing Editor of *Maclean's*, a weekly news magazine. In 1997 Gzowski received the Peabody Award for his outstanding contributions to broadcasting and in 1999 was named an Officer of the Order of Canada.

GEORGE HARRISON, 58, (11-29-01) guitarist and composer. Harrison's guitar playing added a "rock 'n' roll flash" to The Beatles' sound which helped them achieve early success. With his song writing he contributed spirituality and Eastern influences to their music. In 1964, Harrison's first composition, *Don't Bother Me*, was recorded on side two of *Meet the Beatles*. It sold 5 million copies. A sampling of his other compositions includes *Here Comes the Sun, Love You Too, I Want to Tell You, Something, I Need You, Taxman,* and *While My Guitar Gently Weeps*. Harrison was a member of the band from its inception in 1959 until its formal breakup in 1970. With his death there are two surviving Beatles, Paul McCartney and Ringo Starr.

EILEEN HECKART, 82, (12-31-01) actress. Heckart began her theatrical career in 1943 and went on to earn an Oscar and three Emmy awards. On Broadway she appeared in *Picnic* (1953), *The Bad Seed* (1955), *Barefoot in the Park* (1965) and *Butterflies Are Free* (1969). In 1956 she starred in the film version of *The Bad Seed*. Other film credits include her Oscar win-

ning performance in *Butterflies Are Free* (1972), *Somebody Up There Likes Me* (1956) and *Bus Stop*. Heckart made her TV debut in 1947 on live dramas. Later she was cast as Aunt Flo on *The Mary Tyler Moore Show* (CBS) and Eleanor Roosevelt on *Backstairs at the White House* (NBC 1979). Other TV credits include *Out of the Blue* (ABC 1979), *Trauma Center* (ABC 1983) and *Partners in Crime* (NBC 1984).

WAYLON JENNINGS, 64, (2-13-02) country singer. Jennings, a singer, songwriter and guitarist, recorded 60 albums and had sixteen No.1 country singles in a career that spanned five decades. Some of his album titles included *Lonesome, Orn'ry and Mean, I've Always Been Crazy, Nashville Rebel, Ladies Love Outlaws* and *Wanted: The Outlaws*. Waylon wrote and sang the theme song, *The Dukes of Hazzard*, for the CBS television show (1979-1985) of the same name. In 1980 the song was number 21 on *Billboard*'s top 60. With Willie Nelson he performed duets like *Mammas, Don't Let Your Babies Grow Up to Be Cowboys; Luckenbach* and *Good Hearted Woman*. Jennings won two Grammy awards and four Country Music Association awards.

HENRY KLOSS, 72, (1-31-02) pioneer in audio and video electronics. Kloss was involved in the development of such consumer products as bookshelf speakers, Dolby tape decks, tabletop radios and large-screen televisions. He founded Acoustic Research (1952), Advent Corp. and KLH (1957) which were largely responsible for bringing stereo high-fidelity to the masses. In 1988 he founded Cambridge Soundworks which advanced the new technology of surround sound and sold audio equipment by mail order. The firm was a success because of Kloss' reputation among audiophiles, strong product reviews and low operating costs. He sold Soundworks in 1997. At Advent Corp. Kloss developed the first large screen projection television called Nova Beam and the first cassette deck to incorporate the noise-reduction system developed by Ray Dolby. This achievement permitted cassette tapes to be used for recording music as well as voices.

PEGGY LEE, 81, (1-21-02) singer and composer. Lee's singing was a part of America's popular music scene for over 60 years. During that time she recorded 600 songs, composed and wrote music, made radio and TV appearances and performed on concert stages and in films. Some of her hit recordings include *Why Don't You Do Right?* (1943), *Golden Earrings* (1947), *Manana* (1948), *Lover* (1952) *Fever* (1958) and *Is That All There Is?* (1969). Lee made her film debut in 1950 opposite Bing Crosby in *Mr. Music*. In 1955 she received an Oscar nomination for her performance in *Pete Kelly's Blues*. Lee wrote the theme music for a number of films including *Johnny Guitar, About Mrs. Leslie, The Heart Is a Lonely Hunter* and *Lady and the Tramp*. Lee was heard on many radio programs including *The Bing Crosby Show* (NBC), *The Chesterfield Supper Club* (NBC), *The Jimmy Durante Show* (NBC), and *Rhapsody on Rhythm* (CBS). Some of her TV credits include *Cavalcade of Bands* (Dumont), *The Frank Sinatra Show* (ABC), *The Nat "King" Cole Show* (NBC), *Songs for Sale* (CBS) and *TV's Top Tunes* (CBS). Lee began performing at 14, but it wasn't until she sang at Chicago's Ambassador West Hotel that her career took an upturn. There Benny Goodman heard her and in 1941 hired her to sing with his band. Lee married Dave Harbour, Goodman's guitarist, in 1943 and for a time retired to compose music and write songs with him. Later she resumed her career recording for Capitol Records and performing with the top stars of the day. Her final public appearance was at the Hollywood Bowl in 1995.

F. MERRILL LINDSAY, JR., 91, (11-2-01) communications executive. Lindsay served on the Board of Directors of the National Association of Broadcasters and Broadcast Music Inc. He was also the second President of the Illinois Broadcasters Association. Lindsay began his communications career in the 1930s and served as GM of WSOY(AM) in Decatur, IL from 1939-1956. Lindsay was a former Director of Midwest Television Inc. and President of Lindsay-Schaub Newspapers, Inc. At the time of his death, he was Chairman of the Board of Quincy Newspapers Inc., operator of 11 TV stations, two radio stations and two newspapers.

WALTER REED, 85, (8-20-01) character actor. Reed, who was under contract to RKO for 25 years, acted in more than 150 movies. Some of his film credits include *Mexican Spitfire's Elephant* (1942), *Bamboo Blonde* (1946), *Tripoli* (1950) and *Young Man With a Horn* (1950). He made dozens of appearances on TV shows such as *Adventures of Superman* (syndicated), *The Lone Ranger* (ABC), *Gunsmoke* (CBS), *Have Gun Will Travel* (CBS), *My Three Sons* (ABC & CBS) and *Lassie* (CBS). During WWII Reed appeared in the Army Air Corps play *Winged Victory* by Moss Hart. Last year he received a Golden Boot Award from the Motion Picture & Television Fund for his work in Westerns.

DICK SCHAAP, 67, (12-21-01) sportscaster. Schaap won three Emmy Awards for his work on ESPN and three more for features on ABC's

20/20 and ABC's *World News Tonight*. He was host of ESPN's *Sports Reporters* and ESPN Radio's *The Sporting Life with Dick Schaap. He* moderated ESPN Classic's *Schaap One on One*. Schaap served as a correspondent for the *NBC Nightly News* and *The Today show* from 1971-1980. He also worked for a number of national magazines and New York City area newspapers and was the author of 33 books. Schaap was the first newspaper person to become a success on TV, which opened the door for others to follow.

AVERY SCHREBER, 66, (1-7-02) actor. Schreiber appeared in both comic and dramatic roles in films, on stage and in television. He also made numerous Doritos chip "cruncher" advertisements. During the 1960s and 1970s he and Jack Burns appeared on such television shows as *Burns and Schreiber Comedy Hour* (ABC), *Our Place* (CBS), *The Ed Sullivan Show* (CBS) and *The Hollywood Palace* (ABC). Schreiber's film credits include *Dracula: Dead and Loving It, Robin Hood: Men in Tights* and voices provided for cartoon characters. Some of his many onstage appearances include *Hamlet, Metamorphoses, A Funny Thing Happened on the Way to the Forum, Can-Can, Showboat,* and *Welcome to the Club*.

HOWARD K. SMITH, 87 (2-15-02) broadcast journalist. Smith reported on every major news story of his day and served as moderator for the first televised presidential debate between Richard M. Nixon and John F. Kennedy in 1960. In 1939 he was hired by United Press in London and was soon reassigned to Berlin. Two years later he was hired by CBS' Edward R. Murrow and became a member of his famous group of wartime radio correspondents known as "the Murrow Boys." He replaced Murrow in London as the Chief European Correspondent in 1946. In 1961 Smith was named Chief Correspondent and General Manager of CBS' Washington Bureau. His CBS television credits include *Behind the News with Howard K. Smith* (1959), moderator of *Face the Nation* (1960-1961) and anchor on several *CBS Reports*. In 1961 he left CBS and a year later the *Howard K. Smith-News and Comment* (1962- 1963) program aired on ABC Television. In 1969 he joined Frank Reynolds to co-anchor ABC's evening television newscast. From 1970 to 1975 it was known as *The ABC Evening News with Howard K. Smith and Harry Reasoner*. Smith left ABC in 1979 to lecture and write his autobiography.

KIM STANLEY, 76, (8-20-01) actress. Although Stanley appeared in films and early television she is probably best remembered for her stage work. She made her debut in *The Dog Beneath the Skin* at the Carnegie Recital Hall in 1948. A year later she made her first appearance on Broadway replacing Julie Harris in *Monterrat*. This was followed by roles in *Picnic, Bus Stop, A Far Country* and *The Three Sisters*. Some of Stanley's television credits include appearances on *Danger* (CBS), *Goodyear TV Playhouse* (NBC), *Omnibus* (CBS) and *Sure As Fate* (CBS). She received Emmy Awards for her performances on *Ben Casey* (ABC) in 1963 and *American Playhouse* (PBS) in 1985. Stanley made her first film in 1958 portraying Marilyn Monroe in *The Goddess*. She received Oscar nominations for her performances in *Seance on a Wet Afternoon* (1964) and *Frances* (1982). Her final film was *The Right Stuff* in 1983.

JOHN F. WILLIAMSON, W3GC, EX-3GC, 95, (3-19-02). Williamson was co-founder of Barker and Williamson Company with his longtime friend Barrie Barker (W3DGP). First licensed as 3GC in 1921, Williamson grew up with spark but enthusiastically embraced early tube technology. He worked part time at the family hardware store in Ardmore, PA while attending Haverford School. He studied electrical engineering at Drexel Institute for three years but was forced to withdraw at the onset of the depression. The B&W firm began in the depression year of 1934 when, with no employment prospects in sight, the two men set up shop to make air-wound coils in a corner of the Barker family textile mill. Barrie handled manufacturing while Jack went on the road, showing samples and product at radio stores and amateur radio gatherings. The B&W coils gained wide acceptance and the line expanded. Just before WWII, the firm was asked to design the antenna tuner for the Signal Corps BC-610 transmitter. They were later awarded the production contract for the tuner (BC-939). The firm then grew rapidly, undertaking contracts of greater complexity. After the war, B&W manufactured parts and equipment for both the military and amateur radio sectors. Barker retired from the firm in the early 1960s, but Williamson remained active until 1964, when the company was sold.

Information for this column was obtained from *The Boston Globe, Broadcasting and Cable, The Complete Directory to Prime Time Network TV Shows 1946-Present (4th ed.), The Encyclopedia of Jazz (lst ed.), The Hartford Courant, The Murrow Boys, On the Air: The Encyclopedia of Old- Time Radio, The New York Times* and *Variety*. Thanks to Frank Q. Newton, Jr., W6SYG; Bob Thomas, W3NE and Dr. A. David Wunsch for additional source material.

BY BILL FIZETTE, W2DGB

A STRUCTURED APPROACH TO FIXING UP THOSE NICE OLD RADIOS

9—Restoration of a Meissner 8-tube "Combination" Kit Receiver

Part 1 — Inspection and Cleaning

Several years ago I was fortunate enough to acquire this radio at one of the AWA regional meets. It was sitting under a table in a cardboard carton, and appeared to be just another piece of incomplete junk. However, the name Meissner, a well-known radio and component manufacturer from the golden days of radio in the 1930s and '40s, was prominent enough to arouse my interest.

To stimulate lagging sales during the Depression years, the Meissner Manufacturing Co. of Mt. Carmel, IL, marketed radio kits as well as components, and published a "How to Build" instruction manual containing technical information on all products. This radio appeared to be one of those kits.

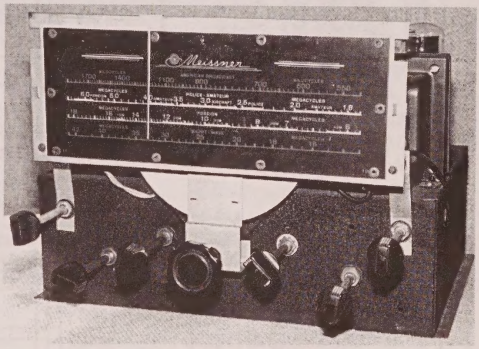
I confirmed that by finding the details in the 1938 Meissner book, where it was called the "8-Tube Combination Receiver," Model 10-1116. I felt that the Model 10-1116 would make a great case history for this series of articles for the beginning radio restorer.

Taking Stock

Let's put our background from past articles in the series to work. We have an interesting old radio and it would be nice to get it working, or at least make it look better. We have the basic test instruments and some tools. Standard parts can be purchased. Information is available from a number of sources such as the Meissner "How to Build" manual, and possibly Rider's manuals and the Internet.

So where do we start? As always, we'll need to make a detailed inspection of what we have. Then we'll determine if we can get the necessary information (at least a circuit diagram), find out if parts are available, and finally establish what we wish to accomplish.

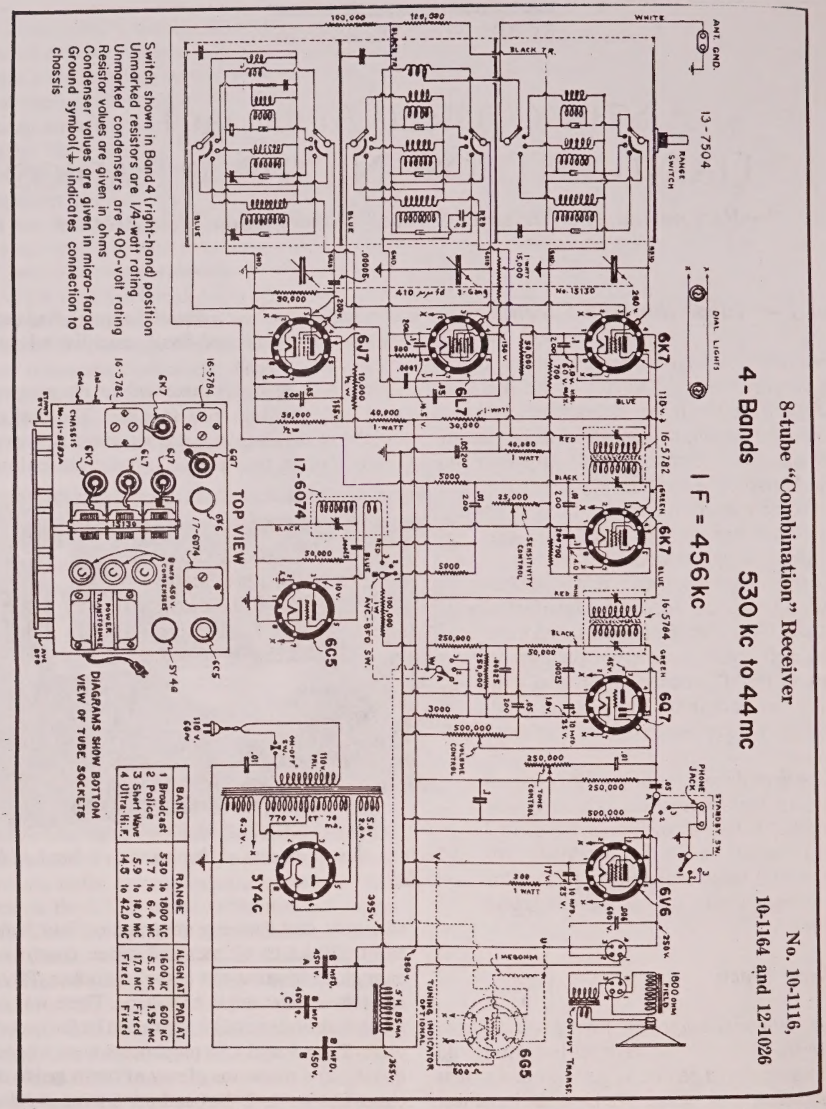
In this case, the set came without the matching accessory cabinet and speaker. The dial escutcheon and knobs were missing. However, there was an impressive large multi-colored slide-rule dial showing coverage on four bands from 530 kc to 42 mc, and seven controls—enough to impress the casual onlooker. Physically the set was not in bad shape. There was not much rust, and overall it seemed to be fairly complete. The r.f. and i.f. components were of good quality, and there was plenty of room inside the chassis to work. Tubes and parts were standard and the Meissner book had all the information we needed. Since the set was not exactly a rare museum piece, we decided that its value to collectors would not be compromised by making repairs. Our goal would be to make the Meissner work once more, as it would have during the Depression and World War II.



Meissner chassis boasts an impressive 4-band slide-rule dial.

This radio is not listed in the Rider's Manuals,

AUTHOR'S ADDRESS: RR 1, BOX55, HENRYVILLE, PA 18332
e-mail w2dgb@enter.net



Schematic of the 10-1116. Optional 6G5 tuning eye (dotted circuitry at right center) could be added by user.

but luckily I did happen to have the Meissner "How to Build" book. If you should ever need a copy, it's a common publication, frequently found in radio flea markets and the listings of used radio book dealers. It is also available as a reprint.

This is a good time to interject a word about the time and other costs involved. It is safe to say that any meaningful restoration will take a minimum of ten hours of personal time, and the average is more like 15-20. If you need to put a dollar value on your time for restoring an old radio, and then add in the cost of parts, you may wish to reconsider. Most of us do this kind of thing as an enjoyable hobby, finding excitement first in the discovery of an interesting old radio, and then

Continued on page 70

BUSINESS CARD ADS

Are you offering a product or service of interest to antique radio enthusiasts? Would you like to let the world know about the tubes, sets or paper you'd like to acquire? Place a business card in this space for the low price of $15.00 and it will seen by over 4,000 hard core devotees of our hobby. Purchase a year's worth of insertions (four issues) for $50.00 and save $10.00 over the individual ad pricing.

Send us a copy of your business card, or a special typeset ad designed to fit our standard space. We can, alternatively, typeset a short message for you (no more than eight lines, 50 characters max per line, please). For the time being, there will be no charge for typesetting. All ads must be for radio-related items or services and must be paid in advance. Send your ads and checks (payable to AWA) to Robert W. Perry, "Smoke Signals," 131 E. High St., Painted Post, NY 14870. Closing date is six weeks prior to first day of month of issue. **All advertising income is used to further the conservation work of the AWA Electronic Communication Museum.**

Modern Radio Laboratories
Since 1932

Crystal Set and One Tube Radio Instructions. Exclusive source, printing and publishing of all MRL Handbooks & literature by Elmer G. Osterhoudt. Tested instructions and plans.

Catalog $2.00 ppd.

MODERN RADIO LABS
P.O. Box 14902- A
Minneapolis, MN 55414-0902

Radio Activity
Old radios repaired and purchased
Wanted Zenith consoles
Repairs guaranteed
Jim Berg (509) 732-4047
4261 Wilcox Rd. Box A Northport, WA 99157
jimfberg@webtv.net
http://homepage.plix.com/Radioactivity

Early Radio & Collector Tubes
BUY,SELL,TRADE
Call, write or e-mail for catalog or list

GEORGE H. FATHAUER & ASSOC., LLC
688 W. First St. Ste 4, Tempe, AZ 85281

Phone: 480/968-7686 Email: fathauer@home.com
Fax: 480/921-9957 URL: http://www.fathauer.com

QCWA 2002 CONVENTION
OCT 25-27 ORLANDO, FLORIDA
Hotel: Ramada Plaza Hotel & Inn 800 327 9170
Registration: wa2ars@aol.com 407 814 0434
For information: WWW.QCWA.ORG
"Come on down"

Bob's Antique Radios
Buy-Sell-Trade
Quality Capacitors and
Electrolytics at fair prices
For more Information visit
Radioantiques .com or Email
radiobob1@ aol.com

RADIO DAZE
MAIN OFFICES & RETAIL STORE
7 Assembly Drive, Mendon, NY 14506
Tel: 716-624-9755 Fax: 716-624-7857
Our Website: www.radiodaze.com
VINTAGE RADIO & ELECTRONICS
Sales - Service
Components - Supplies
Information - Literature
email: info@radiodaze.com
Radio Daze, LLC - A Limited Liability Company

ANTIQUE ELECTRONIC SUPPLY
6221 S. Maple Avenue Tempe, Arizona 85283 USA
Phone 480.820.5411
Fax 480.820.4643 or 800.706.6789
www.tubesandmore.com
info@tubesandmore.com

Highest quality how-to books!
Brand new & reprints of classics. Early radio, electronics, electricity, machines, science & tech! Projects, plans, nuts & bolts. **Big Catalog!**
http://www.lindsaybks.com
Lindsay Publications
PO Box 538 Bradley IL 60915

KEEP HISTORY ALIVE!
Your old photos restored to like-new condition. We can:
- **Repair damage**
- **Reconstruct missing pieces**
- **Remove flaws**
- **Restore detail**
- **Rearrange elements**

Fully digital process. Your original treated with utmost care and returned unharmed. Free estimates. Packaging and shipping provided.For further details call **866-CGS-IMAGES** or email us at cgsimages@aol.com.
CGS Images

Antique Radio & Television
94 Golden St., New London, CT 06320
www.tuberadiorepair.com
Visit our shop in downtown New London
William Morse
(860) 442-0233 Mon.-Sat. 11 am to 7

Organize Your
Antiques & Collectibles
Antique Tracker™
Antique and Collectible Inventory Software
http://www.antiquetracker.com

A STRUCTURED APPROACH, *continued from page 68*

having it come alive under our hands.

The transformer-operated multi-tube superheterodyne circuit was standard for its era, except in this case there was the bonus of an r.f. stage and a separate oscillator stage. The heart of the receiver was the Meissner "Multi-Wave Coil Assembly." The i.f. transformers were iron-core "Ferrocart" in large shield cans. There was also a b.f.o., which gave the set a communications-receiver capability. The circuit showed how to add an optional tuning eye.

The controls were (left to right in the picture of the front of the set): phones/standby/speaker switch; sensitivity; audio volume; main tuning; bandswitch; tone; and a.v.c./b.f.o. switch. On the rear apron there were connections for speaker and headphones. A two-terminal connection on the side accommodated the antenna and ground.

Clean-Up and Examination

Don't even consider working on a long-neglected radio until you clean off the accumulated dirt, dust, mouse leavings, and so forth. Get out the vacuum cleaner hose and some small paintbrushes to remove the dust and dirt. Try to do this in a well ventilated area, as some types of particulate dust can be unhealthy. A face mask is suggested. If there is too much dirt left, then don't be afraid to wash off the chassis with a detergent solution. Do it slowly and carefully to avoid getting water into the transformers, and then be sure to dry the area thoroughly. A hair dryer works well.

Now that we know what the radio is and where it came from, it is time to make a list of the mechanical and cosmetic work that will be needed. This includes missing tubes and knobs, broken dial cords; corrosion, cracked dial glass, chassis corrosion, and so forth. Decide if you can handle these problems.

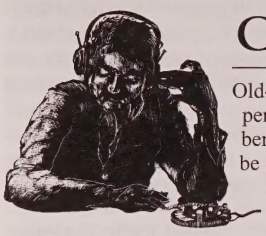
Now inspect the electrical parts. Look for burned resistors; if you find one with an associated by-pass capacitor, both will have to be replaced as the by-pass is undoubtedly bad. In fact, while you are at it, consider replacing all of the old waxed paper capacitors, and probably the early plastic encased caps. These are almost always bad. Also, take it on faith that the electrolytic capacitors are bad, especially on a radio as old as this one. Look for pools of wax and other signs of overheating. Inspect for any signs of previous service work. Each will represent a potential circuit problem.

Check each and every resistor, and if they are more than 20% from the labeled value, mark them for replacement. They are usually high in value; if you find one that is significantly lower than it should be, you may have to disconnect one end to be sure of your measurement. A small piece of masking tape will identify the bad units when the time comes. If the radio has been stored in a damp area, it is almost a sure thing that the resistors are now much higher than they were originally.

I.f. transformers can be a problem, as not infrequently there will be capacitors and resistors inside some of the cans. In many of the old radios it is possible to remove the can from the chassis, leaving the inside of the transformer still wired in place. Then you can inspect the coils and run continuity checks, and also look for any other problems.

It is most important to inspect each wire and each solder joint under a strong light, preferably with a magnifier. Solder joints can crystallize, and a wire may separate inside the insulation. It takes only a few minutes, and it is time well spent.

This restoration project will conclude with the publication of Part 2 in the next issue.



Classified Ads

Old-time ads are free to members collecting and restoring equipment for personal use. Please observe the following: (1) one ad per issue per member; (2) include as SASE if acknowledgement is desired; (3) material must be more than 25 years old and related to electronic communications; (4) give your full name, address and zip code; (5) repeats require another notice (we are not organized to repeat automatically); (6) the AWA is not responsible for any transaction; (7) we retain the right to reduce an ad's size if over seven lines; (8) AWA does not accept commercial advertising in this column; and (9) closing date is six weeks prior to first day of month of issue. Ads received after that time will be held for the following issue. Mail all ads to: **RICHARD RANSLEY, P.O. BOX 41, SODUS, NY 14551**.

IMPORTANT!

OTB classified ads are now available for browsing in the "*OTB On Line Edition*" on our internet web site (www.antiquewireless.org). This practice will give members dramatically increased exposure for their ads.

SELL/TRADE—BC/SW TUBE RADIOS

Zenith radios: 660-A, $65.; Royal 3000, $195.; G-500 T/O, $100; Panasonic RF-900, nice, $245; National Panasonic RF-5000, extra nice, $285; Ross Global Traveller, clean, $150.; RCA 3BX-671, brown leather, $195.; Lafayette 225, $200.; Norelc o 9-band portable, $145.; Grundig Ocean Boy, $50.; Schwaub-Lorenz 107-A "Touring Professional", nice, $295.; Schwaub-Lorenz "Touring Luxus" 80, $250.; Schwaub-Lorenz "Touring Europa", $250.; Sharp FV-1710, 6-band port., $50.; Mackay Type 401-A emergency lifeboat radio, with canvas, unusual, $200. Dave Crocker, 35 Santuit Pond Rd., #4B, Mashpee, Cape Cod, MA 02649 (508) 477-1578, before 9 p.m. please

---

One hundred (tube) bedroom plastic radios, most with Civil Defense markers and clocks, E-mail photos available. Francis Yonker, W2IBH, 1229 Inverary Place, State College, PA 16801 (814) 867-1400 E-mail: yonker1229@adelphia.net

---

1937, '38 receivers: RCA 86K, GE E-105, Philco 37-650; 1929 Majestic 91, Brandes B-15. Above working consoles are $120. each. Other consoles at $60. each and up. Many other radios. Please send SASE for list. Malcolm D. Burdick, W1NOO, 156 Station Rd., Hampton, CT 06247 (860) 455-9640 before 8 p.m. please.

Iasco Gold Tone one transistor radio. The radio is assembled, has the instructions and is in the original box, radio size is 3" × 2" × 1 1/4". Will trade for tombstone or cathedral radio, or make offer. Kenneth Miller, 10027 Calvin St., Pittsburgh, PA 15235 (412) 242-4701

Magnavox console radio AM/SW with 78 RPM record changer. Model 151B, $50.; GE table clock radio , Model 514, $30.; Emerson Electric phonograph, 78 RPM, $20. All in working condition, pick-up only. William Albohn, 6 Quaker Hill Rd., Pawling, NY 12564

I'm getting out! Start or add to your collection. 21+ nice old table radios. Most work fine, some restored. Assorted parts also, $120 or BO (pick up only). For photos send SASE to Henry Seesselberg, 22 Christy Dr., Warren, NJ 07059 or e-mail HSEESSELBERG.MTOO@worldnet.att.net *(note: e-mail address was given incorrectly in the February, 2002 issue).*

SELL/TRADE—COMMUNICATIONS GEAR

75A3 Receiver and 75A Receiver. Arnold Wilson, N2EZ, 12 Princeton Rd., Audubon, NJ 08106 (856) 547-7884

Hallicrafters receivers: S-38B, $50.; S-86, $195.; S-106, $35.; SX-130, $240.; SW-500, $45.; TW-1000, $195.; 5R-10A, $45.Dave Crocker, 35 Santuit Pond Rd., #4B Mashpee, Cape Cod, MA 02649 (508) 477-1578, before 9 p.m. please

Two fine longwave receivers: RBL-3 and RAK-8 w/pwr. supply, $140. each. Many other radios. Please send SASE for list. Malcolm D. Burdick,W1NOO, 156 Station Rd., Hampton, CT 06247 (860) 455-9640 before 8 p.m. please.

SELLTRADE—GENERAL

Western Electric 102F tube, $ 60 OBO; Lafayette tube-type C-B, Model 25-A, crystal controlled with Turner +2 microphone, $ 75. All plus shipping. Ernie Nagy, l 1012 S. Collier, Unit 112, Marco Island, FL 34145 (231) 264-9412 E-mail: elnagy1599@webtv.net

DeMambro DM51 desk mike, stylish, $100.; Headphones: W.E. Type 509W, $25.; Brandes, $15.; Peerless, $15.; Murdock, $15.; Acme, $15.; Baldwin phono-adapter, $15. Dave Crocker, 35 Santuit Pond Rd., #4B Mashpee, Cape Cod, MA 02649 (508) 477-1578, before 9 p.m. please

Radios, test equipment, literature and tubes. Must sell due to health problems. Send $2.38 and SASE. Paul M. Williams, 2364 Beaver Valley Pike, New Providence, PA 17560-9622 (717) 786-3803

Home-built 3-tube oscillator-modulator. Connect FM radio, cassette or CD player to my unit or connect unit to any AM broadcast band radio, even a crystal set! Has bass, treble, level, tuning controls; 3 octal tubes, 6ZY5G, 6SB7-Y, 5693, with instructions, $35. (firm) and includes shipping to USA-48. Jim Farago, 4017 42nd Ave. South, Minneapolis, MN 55406-3528 (612) 722-0708

SELL/TRADE—KEY & TELEGRAPH

T. R. McElroy telegraph key. I believe it is a Model P-500, $ 150. or best offer; Western Electric 30B sounder, $ 35. All plus shipping. Ernie Nagy, l 1012 S. Collier, Unit 112, Marco Island, FL 34145 (231) 264-9412 E-mail: elnagy1599@webtv.net

SELL/TRADE—LITERATURE

For sale by Alfred H. Grebe, Jr.: Photos, documents, etc., (some originals, some copies) from the actual files and records of A. H. Grebe & Company, Inc. SASE for list. Alfred H. Grebe, Jr., 1001 Westham Parkway, Richmond, VA 23229 E-mail: GREBERADIO@AOL.COM

Radio schematics & service data, $2.50 plus #10 SASE: U.S. (1920s to 1970s); Canadian (1920s to 1970s); Australian (1930s to 1950s); United Kingdom (1930s to 1960s); European (1930s to 1960s). Price is for 1 to 5 pages of data per model. Over 5 pages copy charge is 20 cents per page. Questions and/or quotes will be answered by mail or E-mail. Want radio club publications, newsletters & journals. Steve Rosenfeld, P.O. Box 418, Manahawkin, NH 08050 E-mail: radioschemas@ yahoo.com

Books: Most Often Needed Radio Diagrams, 1926-1938, $15.; Collectors Guide to Antique Radios, Bunis, Fourth Edition, $15.; Original Kolster radio Service Manual, 181 pp., $45.; Original Steinite Service Manual, 68 pp., $45.; Andrew Toross, 425 Old County Rd., Orange, CT 06477 (203) 795-4533

16 file cabinet drawers of catalogs, brochures, flyers, circuits, manuals, books and literature. E-mail photos available. Francis Yonker, W2IBH, 1229 Inverary Place, State College, PA 16801 (814) 867-1400 E-mail: yonker1229@adelphia.net

Complete set of *OTB*s in good condition beginning with volume 20 #2 issue through volume 42 #4 (90 issues). Asking $150. postpaid or best offer; Allied Radio catalogs 1968, 1969, 1970, $10. each postpaid. Tom Willard, 102 Crestwood Townhouses RR#2, Moscow, PA 18444 E-mail: tgwillard@ juno.com

Copy of complete AK Radio Service Manual 1931. 463 pp. Covers Model 10 thru 976 & speakers. Includes Parts Price Lists Feb. 1931 & March 1935. Professionally bound, $80.; Ghirardi radio Troubleshooters Handbook, enlarged edition. (case histories of receiver troubles & remedies). 744 pp., excellent condition, $50. Andrew Toross, 425 Country Rd., Orange, CT 06477 (203) 795-4523

Military Technical Manual TM-11-314 "Antennas and Antenna Systems", $7. plus UPS. John Uscinowski, KE2O, 95 Vly Summit Road, Greenwich, NY 12834-9519

SELL/TRADE—PARTS

Fresh stock, high voltage, high quality mylar film and electrolytic capacitors for tube radios. 10% off your 1st order with a photocopy of this ad. For product info write: Dave Cantelon, 42 Clematis Road, North York, Ontario, Canada, M2J 4X2 WebSite: www.justradios.com E-mail: justradios@yahoo.com

Transmitter parts, with everything to build R.F.

chassis and power supplies, cabinets, chassis, panels, meters, etc. One lot of 150 wooden drawers of new replacements parts. Another lot of 54 steel drawers of larger parts E-mail photos available. Francis Yonker, W2IBH, 1229 Inverary Place, State College, PA 16801 (814) 867-1400 E-mail: yonker1229@adelphia.net

SELL/TRADE—TEST GEAR

Q Meter, Boonton Type 190A, 20-260 mHz, excellent condition, $ 150. plus S & H. with manual. L. Gardner, 458 Two Mile Creek Rd., Tonawanda, NY 14150 or E-mail radiolen@aol.com

GR Wavemeter w/5 sets of coils, all boxed, $100. Dave Crocker, 35 Santuit Pond Rd., #4B Mashpee, Cape Cod, MA 02649 (508) 477-1578, before 9 p.m. please

Service repair bench with 20 analyzing instruments and testers. E-mail photos available. Francis Yonker, W2IBH, 1229 Inverary Place, State College, PA 16801 (814) 867-1400 E-mail: yonker1229@adelphia.net

SELL/TRADE—TUBES& TRANSISTORS

DeForest DV-5, $50.; Type 45, (st), $15.; UX-245, (balloon), $25. 24-A (Wizard), $4.; 25Z5, w/box, $4.; 57 RCA, w/box, $3., 80 Arcturus, $5.; CRC 814, (VT-154), $12. Dave Crocker, 35 Santuit Pond Rd., #4B, Mashpee, Cape Cod, MA 02649 (508) 477-1578, before p.m. please

(2) 811, (1) TX20, (5) TX40, (1) T200, (3) 100 TH, (3) 35T, (1) WE350B, (1) WE274B, (2) WE393A, (1) 3AP1, (4) RK60, (1) 81, (3) 802, (1) RK25, (2) 3C24, (2) 4-125A, (1) 865, (2) ZB120, (2) FG57. Arnold Wilson, N2EZ, 12 Princeton Rd., Audubon, NJ 08106 (856) 547-7884

Western Electric 205D, one brass and one bakelite, good filaments, emission unknown, each US $50., Des Wright, 3 Tamatea Drive, Snells Beach 1240, New Zealand

WANTED—COMMUNICATIONS GEAR

Kenwood plug-in module #TU 79 subtone unit to add repeater subtone capability to my old Kenwood TR 7930 two meter rig. New or used. Don Dye, K0JVE, 2006 6th Ave. East, P.O. Box 68, University Park, IA 52595-0068

British airborne radio sets TR.9D, RT.1196 or TR.1304. Also US Forest Service sets SP, PF, S, SV, SX or SJ. Have 1930s-1970s ham gear and telegraph keys to trade, or cash Rick Ferranti, WA6NCX, 1341 Cedar Street, San Carlos, CA 94070-4755 (650) 859-2857 or E-mail: remler@juno.com

WANTED—TEST GEAR

Waveforms, Inc. (or Dumont) Audio Oscillator. Good condition preferred. Will pay up to $100. depending on condition. Defective is also OK. Charles Graham, K2GVE, 4 Fieldwood Drive, Bedford Hills, NY 10507

WANTED—GENERAL

Want to buy a National TV7 7 inch TV set; any pre-WWII TV set; 10BP4. Thanks! Charles Harper, 2000 Jackstown Road, Paris, KY 40361 (859) 484-9393 E-mail: charper@kyk.net

Kadette "Topper" radio, Cosmo radio, 1948 NY Mfg., Jerry Talbott, 1440 SW 239th, Hillsboro, OR 97123 (503) 649 6717 or E-mail:jerryt@easystreet.com

WANTED—INFORMATION

Diagram of Andrews Deresnadyne Type A. It is a 5 tube 3 dialer with a unique on-soft-loud switch made by Andrews Radio Company of Chicago. Is this the Andrews Antenna Mfr. of today? George E. Hausske, W9OLE, 1922 E. Indiana St., Wheaton, IL 60187, (630) 668-3845

WANTED—KEY & TELEGRAPH

Unusual bugs (speed keys) such as wood base, pre-1920s, right angle, left handed, verticals, dual pendulum, miniatures, colored bases, etc. If you have a bug that I don't have in my collection, I am interested. Gil Schlehman, K9WDY, 335 Indianapolis St., Downers Grove, IL 60515 (630) 968-2320 E-mail: dumdum7777@hotmail.com

WANTED—LITERATURE

Want first issue of QST which I believe was in 1914 or 1917. Will pay top dollar. Jerry Mulberg, W2MJP (same call for 63 years), 609 Kappock St., Apt. 8E, Riverdale, NY 10463-7756

Operating manual/parts list/schematic for Heathkit IT-28 Capacitor Checker. Photocopy or original. Ashley Kennedy, 1307 Rosalie St., Evanston, IL 60201 (847) 475-2481 E-mail: Knnashley@aol.com

WANTED—MILITARY

IN-85 antenna insulator as used on SCR-178 Radio Set; LP-22 Loop Antenna as used on BC-470 DF Receiver; BC-1209 Radio Receiver-Transmitter Set, 2.2-4.6 mHz. Paul Thekan, 335 Rutherford Ave., Redwood City, CA 94061-3514 (650) 367-1499 E-mail: Paul.Thekan@eimac.cpii. com

WANTED—PARTS

Need speaker for Philco Model 70. Have parts to trade or will buy outright. Lin Robertson/KJ6EF, 2833 Cazadero, Carlsbad, CA 92009; (760) 930-0276; kj6ef@amsat.org.

SILENT KEYS

We record the passing of the following AWA members with deep regret.

STEVE FRIED, K2PTS (3-25-02)

***KENNETH J. GARDNER**, W2BGN, 94, (1-14-02)

***JACK KINGMAN**, (12-16-01)

CHARLES NEVEL, W3KSQ

FRANK R. OWEN, KA4WPI, 75, (3-19-00)

AARON SOLOMON

JOHN FRANCIS STRAUSS, W3TWH, 79, (11-6-00)

CHRISTOPHER R. WINCEY, N1BKR, 72, (2-5-02)

***JOHN F. WILLIAMSON**, W3GC, EX-3GC, 95, (3-19-02)

*KENNETH J. GARDNER

Broadcast engineer and former AWA officer. Gardner was Director of Engineering at WHAM (AM) in Rochester, NY and was involved in building its sister FM station and WHAM(TV) now WROC(TV). For many years he was Vice President and a Director of AWA as well as Editor of the Amateur Radio column in *The OTB*. He also contributed numerous technical articles to the publication. Gardner promoted the operation of early amateur radio equipment and conceived the idea of the Old Timer's Contest in 1971. He presided over the event for the next twenty years. Notes can be sent to: Ken Gardner family, 2342 Barnes Road, Walworth, NY 14568.

*JACK KINGMAN

A true old-time radio operator, he worked on merchant ships for years and, later on the SS United States. His land assignments included WCC in Chatham, MA, WSC in Tuckerton, NJ and RCA's WNY in New York Harbor.

*JOHN F WILLIAMSON

Co-founder of Barker and Williamson Co. See writeup in "Recent Radio, TV and Entertainment Obituaries." Notes can be sent to John Williamson family, 465 Darby-Paoli Road, Paoli, PA 19301-2005 or 28740 Valley Road, Kentmore Park, MD 21645-3310.

AWA MEMORIAL GIFTS PROGRAM

This is to announce the establishment of a Memorial Gifts Program designed to enable friends and family members to make gifts in honor of AWA members who have passed on. Gifts may be directed to the Antique Wireless Association or to the AWA Museum.

The program was suggested by AWA Vice President Ron Frisbie who, with his wife Jan, presented the first gift—in remembrance of Renate deHenseler, wife of the well-known collector and author Dr. Max deHenseler. Our deepest sympathy goes to Max for his loss.

William Fizette, President
Antique Wireless Association

Note: AWA officers and members are requested to submit all information about Silent Keys, with or without special recognition, to Joyce Peckham, Secretary, Box E, Breesport, NY 14816. This will help in the collection, coordination and appropriate recognition of both AWA members and others who have made contributions to the electronics and entertainment industries.

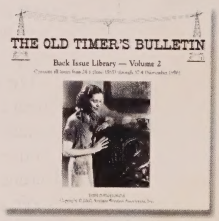
NOW AVAILABLE FROM THE AWA MUSEUM STORE

All profits are used to support the Museum • See back cover for order blank

AWA REVIEW VOLUME 14

Five articles with over 200 photographs documenting the history of early wireless and radio. Also contains the first cumulative table of contents covering all previous volumes of the *Review*. The articles cover (1) the role of spark keys in the history of wireless telegraphy (by Russ Kleinman, James Kreuzer, Karen Blisard, and Felicia Kreuzer), (2) a project being conducted by Russ Kleinman and Karen Blisard in which they are attempting to chronicle and list all known manufacturers of spark keys, (3) the history of the Canadian Marconi Company (by Robert Murray and Roger Hart), (4) the work of De Forest and Johnson at the American Wireless Telegraph Company (by Glenn Trischan), and (5) the artistic and technical origins of some of the Bakelite radio cabinet designs (by Barbara Havranek). *Price: $27.50 US postpaid in U.S. and Canada; elsewhere, add $5.00*

THE OTB ON CD ROM



These discs run on any PC or Mac system capable of running Acrobat 4.0 (free copy included). PCs should have 486 or better processor, 10 Mb of free hard disc space, MS Windows 95 or 98 or NT 4.0 with service pack 3 or later.

Volume 1 (Contains all issues from January, 1960 - March, 1985)
Price: $49.95 US, postpaid in U.S. and Canada; elsewhere, add $5.00

Volume 2 (Contains all issues from June, 1985 - November, 1996)
Price: $49,95 US, postpaid in U.S. and Canada; elsewhere, add $5.00

Volumes 1 and 2 ordered together
Price: $89.95 US, postpaid in U.S. and Canada; elsewhere, add $5.00

NEW!!! AWA REVIEW 1-5 ON CD ROM

Operating requirements same as *OTB* CDs above.
Now you can acquire these scarce, out-of-print volumes for your library.
Price: $19.95 US, postpaid in U.S. and Canada; elsewhere, add $3.00.

INDEX OF AWA PUBLICATIONS

Master index of *The OTB*, *The AWA Review*, and other AWA documents through March, 2000. Available on either paper or 3.5-inch floppy disk (specify when ordering). Text format, searchable with your word processor.

Price: $9.00 US, postpaid in US and Canada for either version (please specify). Elsewhere, add $1.00.; $2.00 discount with any purchase of $19.00 or more (see back cover). NOTE: This index is included on the *AWA Review* CD ROM and both of the *OTB CD* ROMs.

HANDSOME AWA PIN

Replaces the far-too-expensive hand-made gold pins of yesteryear. The new pin maintains the stylized AWA logo surrounded by a Hertz loop, but adds the words "Antique Wireless Association" wrapped around the loop in bright gold. Background is dark blue cloisonné and the pin is clutch mounted. 1" in diameter. *Price: $6.00 US and Canada, elsewhere, add $1.00.*

Make checks out to "AWA Museum" and send to Ed Gable, Curator, AWA Museum, 187 Lighthouse Rd., Hilton, NY 14468.

MUSEUM STORE ORDER FORM

OTB BACK ISSUES *Priced at $3.00 each postpaid. 20% discount for orders of 6 or more issues; 30% discount for orders of 12 or more. AWA review issues do not count towards the discount.*

QTY	ISSUE	QTY	ISSUE	QTY	ISSUE	QTY	ISSUE
_____	25-4	_____	29-2	_____	32-2	_____	36-1
_____	26-1	_____	29-3	_____	32-4	_____	36-2
_____	26-2	_____	29-4	_____	33-2	_____	36-3
_____	26-3	_____	30-1	_____	33-4	_____	36-4
_____	26-4	_____	30-3	_____	34-1	_____	37-1
_____	27-1	_____	30-4	_____	34-3	_____	37-2
_____	28-1	_____	31-1	_____	34-4	_____	37-3
_____	28-2	_____	31-2	_____	35-1	_____	37-4
_____	28-3	_____	31-3	_____	35-2	_____	38-2
_____	28-4	_____	31-4	_____	35-3	_____	38-3
_____	29-1	_____	32-1	_____	35-4	_____	38-4

Volumes 39-42 — All Issues Available

INDEX OF AWA PUBLICATIONS *$2.00 discount with purchases of other items totaling $19.00 or more.*

QTY	VERSION	QTY	VERSION
_____	3.5-inch floppy @ $9.00	_____	hard copy (paper) @ $9.00

AWA REVIEW BACK ISSUES *Priced as indicated. No quantity discount.*

QTY	ISSUE	QTY	ISSUE	QTY	ISSUE
_____	Volume 6 $6.00	_____	Volume 8 $6.00	_____	Volume 10 $13.00
_____	Volume 7 $6.00	_____	Volume 9 $13.00	_____	Volume 13 $16.95
				_____	Volume 14 $27.50

CD ROM DISKS *Priced as Indicated.*

OTB BACK ISSUE CDS

QTY	DISC	QTY	DISC	QTY	DISCS
_____	Vol. 1 (issues 1-1 thru 25-4) @ $49.95	_____	Vol. 2 (issues 26-1 thru 37-4) @ $49.95	_____	Set: Vol. 1 and Vol. 2 @ $89.95

AWA REVIEW BACK ISSUE CD

QTY	DISC
_____	AWA Review Vols. 1 thru 5 @ $19.95

AWA MEMBERSHIP PIN

QTY	
_____	Pin @ $6.00

ORDER TOTAL CALCULATION *Note: Foreign postage surcharge does not apply to Canada.*

_____ **OTB Back Issues @ $3.00 = $_____**
Subtract $_____ Discount (if any) / Add $3.00 foreign postage if applicable. ***Total OTB Order $_____***

_____ **Indexes (paper or disk) @ $7.00 = $_____**
Subtract $2.00 discount if applicable / Add $1.00 foreign postage if applicable. ***Total Index Order $_____***

_____ **Total AWA Review Cost = $_____**
Add $5.00 per volume foreign postage if applicable. ***Total Review Order $_____***

_____ **Individual OTB Back Issue CDs @ $49.95 = $_____**
Add ____**Vol 1 + Vol 2 sets @ $89.95 = $_____**
Add $5.00 foreign postage if applicable. ***Total OTB CD Order $_____***

_____ **AWA Review Volume 1-5 CDs @ $19.95 = $_____**
Add $5.00 foreign postage if applicable. ***Total AWA Review CD Order $_____***

_____ **AWA Membership Pin @ $6.00 = $_____**
Add $1.00 foreign postage if applicable ***Total Membership Pin Order $_____***

Grand total of individual total amounts = $_____

Please make your check payable to AWA Museum and send to:
Edward M. Gable, 187 Lighthouse Rd., Hilton, NY 14468.

Name _____ Address _____

_____